

# Improving Patient Safety: Which ICT Contribution?

**Systemic approach and public health needs:  
from hospital to public health information  
systems**

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- Definition of Public Health Informatics : Systematic application of information and computer science and technology to public health practice, research and learning.

(Yasnoff, 2001)

- Biostatistics
- Epidemiology
- Environmental sciences
- Health services research
- Health Economics
- Public policy
- Sociology and behavioral science
- Ethics and deontology (philosophy)
- History of Medicine and Healthcare systems



- Promise is in engineering innovative new ways to protect and promote the public's health using the power of information science and technology (Kukafka R. Department of Biomedical Informatics, Mailman School of Public Health, USA)



- IT and the rise of “surveillance medicine” : two examples
  - Disease surveillance
  - Adverse events reporting, Patient Safety Indicators and Quality Measures



● Disease surveillance

- Infectious disease (mar)
- Notification of Daily Emergency Alerts, France 2006)

ACTIVITE PRE-HOSPITALIERE	Nombre	Comparaison par rapport au: 10/10/2006			
		Nb moyen des 3 derniers jours	Evolution*	3 jours identiques (Mardi)	Evolution*
Nombre d'affaires traités par le SAMU	652	952	-	650	=
Nombre d'intervention SMUR	61	67	-	71,7	-
ACTIVITE URGENCE					
Nombre total de primo passages	1446	1584,3	-	1799,3	-
dont nombre de passage d'enfants de moins de 1 ans	52	48	+	53,3	=
dont nombre de passage de plus de 75 ans	111	112,3	=	150,3	-
Nombre d'hospitalisation dans l'établissement, hors ZSTCD, après passage aux urgences	303	307,3	=	363,3	-
Nombre d'hospitalisation en ZSTCD après passage aux urgences	62	57	+	81,7	-
Nombre de transfert quel que soit le motif, vers un autre établissement après passage aux urgences	12	11,3	=	17,3	-



- Disease surveillance : from notification to Syndromic Surveillance
  - Notification : use of e-mail, on-line forms, extranet, to post or send information to regional, national and international organizations
    - Cumbersome
    - Induces delays
    - Risk of Inaccuracy
    - Silo approach
    - Lack of standards
    - No interoperability with existing Hospital Information Systems



- Disease surveillance : from notification to Syndromic Surveillance
  - Syndromic surveillance : “Real-time” public health surveillance using data that is routinely collected for other purposes
    - E.g. DOMURPIC (Picardie, France : regional project according to the National plan for automation of the export of Emergency Diagnostics Summary by Emergency Information Systems of all French Hospitals by 2012)
    - E.g. Application of Syndromic Surveillance to preparedness for avian Flu outbreak management (H5N1)



Potential Syndromic Surveillance Data Sources (Kukufka, Woods Hole Bioinformatics Course, NIH NLM, 2006)

- Day 1- feels fine
- Day 2- headaches, fever **Pharmaceutical Sales**
- Day 3- develops cough- cold **Nurse's Hotline**
- Day 4- Sick **Managed Care Org** flu **Absenteeism**
- Day 5- Worsens- call **Ambulance Dispatch (EMS)**  
**ED Logs**
- Day 6- Admitted "pneumonia"
- Day 7- Confirmed
- Day 8- Exit

**Traditional Surveillance**



- IT and the rise of “surveillance medicine” : two examples
  - Disease surveillance : from notification to syndromic surveillance
  - Adverse events reporting, Patient Safety Indicators and Quality Measures

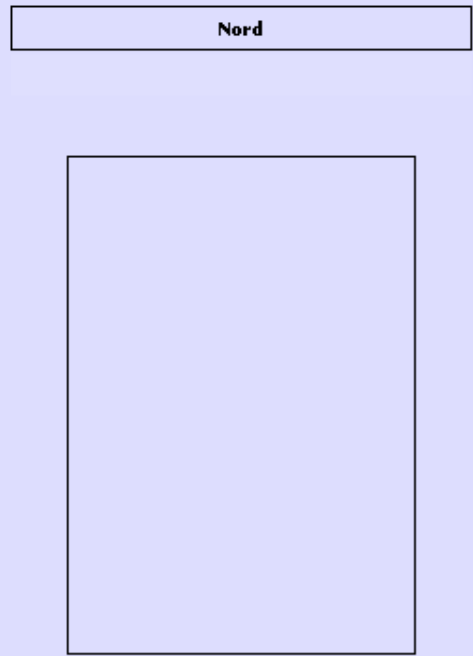
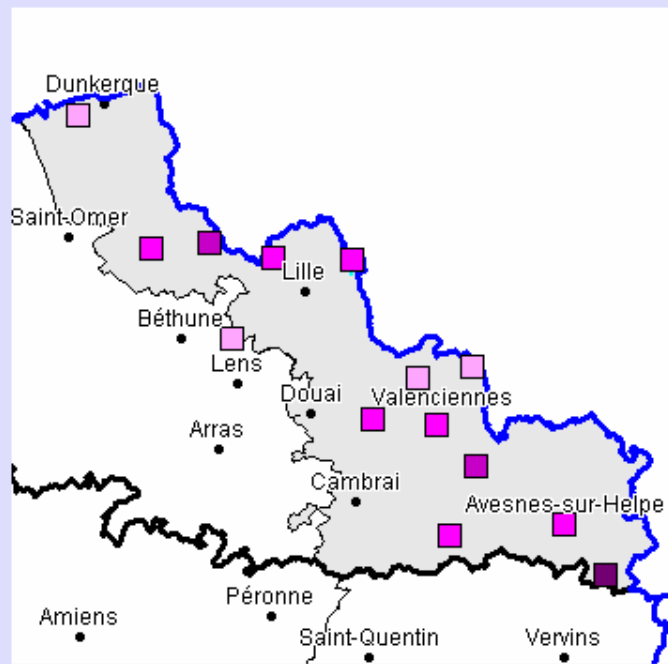


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### Indicateur composite de lutte contre les infections nosocomiales - 2004 (ICALIN)

Notice Carte générale Carte précédente

- Catégories d'établissement**
- CHR-CHU
  - CH INF 300 LITS**
  - CH SUP 300 LITS
  - ETABLISSEMENT PSY
  - HOPITAL LOCAL
  - PRIVE MCO INF 100 LITS
  - PRIVE MCO SUP 100 LITS
  - HOPITAL DES ARMEES
  - SSR-SLD
  - CLCC-CANCER
  - HAD
  - HEMODIALYSE
  - MECSS-POUPONNIERE



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# The Unintended Consequences of Public Reporting of Quality Improvement

Chapter One

Rachel M. Werner, MD, PhD

David A. Asch, MD, MBA

Health capital and

## Power to the Patient:

**D** PUBLIC REPORTING OF  
ative information on h

### Issues

### Expected and Unanticipated

FOR DEBATE

## Public reporting of hospital outcomes based on administrative data: risks and opportunities

### Is Volume Related to Outcome in Health Care? A Systematic Review and Methodologic Critique of the Literature

Ethan A. Halm, MD, MPH; Clara Lee, MD, MPP; and Mark R. Chassin, MD, MPP, MPH

Purpose: To systematically review the methodologic rigor of the research on volume and outcomes and to summarize the magni-

associations were found for AIDS treatment and for surgery on pancreatic cancer, esophageal cancer, abdominal aortic aneurysms,

### Opportunities



## Conclusions (1)

- Issues for eHealth and IT
  - Interoperability (role of the EHR )
  - Taxonomy of medical errors
  - Definition of adequate patient safety indicators (composite)
  - Data mining, Probabilistic risk Assessment tools, Safety by Design
  - Interactions between clinical information systems and Public Health Information Systems (e.g. Clinical decision support, preparedness, crisis management, etc.)
  - Security
  - International (e.g. WHO initiative, DG SANCO portal, CDC).



## Conclusions (2)

IT is a key component of the Patient Safety Movement and the rise of “surveillance medicine” is justified by the new epidemic threats and the quest of Quality in Healthcare and Patient Safety

Nevertheless, Public Health Informatics should be promoted to find the proper way to use IT efficiently

This new research areas should encompass several academic fields of expertise including bioInformatics and IT specialists

Interoperability issues for the creation of seamless Health Information Systems is a key issues that should complement current work done most notably for HER interoperability.



[www.ehealth-for-safety.org](http://www.ehealth-for-safety.org)

Thank you

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