In 2007, InVS dealt with 74 health alerts. Some concerned diseases that are well known and highly monitored (eg, infectious diseases). Other alerts were associated with environmental or occupational exposures that are still little known and rarely studied. Specific surveillances of known diseases and nonspecific surveillance are the 2 pillars that allow a permanent and effective state of alert. In the face of the emergence of new health threats and the onset of events unpredictable in their extent and their consequences (eg, the 2003 heat wave), early detection of health signals, even of low intensity, is essential in public health. InVS is developing tools to respond to this need.

Since the creation in 1992 of the national public health network, which became InVS in 1998, epidemiologic surveillance activities have been reinforced regularly. The best example is the creation in 1994 of the interregional epidemiology units (CIRE). InVS saw its essential tasks of “health surveillance, vigilance, and providing alerts” reaffirmed by the Public Health Policy Act (L. 2004-806 dated 9 August 2004). This act also assigned to InVS the task of contributing to crisis management.

This reinforcement has been matched at the European level, with the creation in 1998 of a European network of epidemiologic surveillance and communicable disease control and in 2004, of the European Centre for Disease Prevention and Control (ECDC), based in Stockholm.

InVS’s primary objective is to be able to cope with new health threats that may not necessarily be detected by alert systems targeting known risks (eg, mandatory reporting). It presumes that the traditional health alert procedures — which remain essential — should be rounded out by a broad prospective monitoring programme to identify unknown phenomena that may present a public health threat — of infectious, environmental, or other origin.

The SURSAUD system: health surveillance of emergency departments and deaths

Since 2004, InVS has experimented with the implementation of a health surveillance system based on nonspecific data, also called syndromic surveillance. It is based on the combination of 4 data sources centralized by InVS and managed by the Alert Coordinating Committee (CCA):

- data transmitted by hospital emergency departments in the OSCOUR network (coordinated emergency department surveillance organization);
- data transmitted by SOS Médecins associations — private services providing emergency general medical care, that is, generally, emergency house calls, not life-threatening situations;
- mortality data centralized by INSEE (National Institute of Statistics and Economic Studies), from vital status registries, and from INSERM, based on electronic death certificates;
- INSERM data on causes of death, based on electronic death certificates.

The combination of these 4 sources of information comprises the SURSAUD system.

To improve this syndromic surveillance, in 2007 InVS organized 2 working groups, made up of members of the different InVS departments, the CCA, and the CIRE. The first considered the contributions and limitations of these surveillance systems, as well as of a strategy for their development and implementation. This work should lead to the production of a strategic orientation document.

The second group sought to enumerate and select statistical methods permitting the detection, within the SURSAUD information system, of variations in the data transmitted that could result from a health event. This group reviewed the literature and is currently in the process of assessing the methods selected.
The OSCOUR network: organization of coordinated surveillance of emergency departments

Established in early summer 2004, the OSCOUR network continued its development in 2007. It relies on the continuous transmission by volunteer hospital emergency departments of specific data on patients visiting the emergency departments: age, sex, severity, medical diagnosis, and short-term outcome (admission, transfer, or discharge). These data are totally anonymized before their transmission to InVS, and the diagnoses are coded according to the 10th revision of the WHO International Classification of Diseases (ICD). The information is sent to InVS either directly by the establishment, or via a regional structure that centralizes the data for participants in the region. A scientific committee monitors the system and ensures good cooperation with the emergency specialists.

Emergency department visits are a reliable and reactive indicator of health problems in the population. A sudden sharp augmentation in their number may be a manifestation of the onset of a health problem and should be investigated.

The OSCOUR network grew strongly in 2007. By the end of the year, 98 hospitals were participating: 34 in Île-de-France, 5 in Picardy, 10 in Limousin, 22 in Languedoc-Roussillon, 8 in Midi-Pyrénées, 8 in Franche-Comté, 9 distributed through other regions of metropolitan France, 1 in Reunion, and 1 in Guadeloupe. Each day, this network reports between 8,000 and 9,000 visits by adults and nearly 2000 by children. This number is high, but the quality of the data can still be improved in some of the participating departments.

The analysis of the information collected by OSCOUR may apply either a quantitative approach (volume of ED visits) or a qualitative approach, taking diseases and age groups into account. These data also complete those collected in the specific surveillance of several diseases (including influenza, gastroenteritis, and carbon monoxide poisoning). They can also be used on an ad hoc basis, as for the surveillance of viral meningitis epidemics in the Paris region in the springs of 2005 and 2006, or to monitor the impact of the heat wave in 2006.

The OSCOUR network in France in 2007

[Map of France showing locations of participating hospitals]


The SOS Médecins network

The SOS Médecins network, set up in July 2006, is the counterpart to OSCOUR for private practice medicine. The various SOS Médecins groups transmit information to InVS by computerized telephone switchboards. The data for each call received include sex, age, postal code of residence, reason for call (diseases or symptoms mentioned by caller), source (individual or the emergency call centre that coordinates prehospital emergency medical services, which may choose to refer a physician from the association rather than its own intensive care ambulances) and, whenever possible, the physician’s diagnosis and the short-term outcome (referral to a hospital, etc.).
Of the 59 French associations of SOS Médecins, 37 (62%) were transmitting data to InVS by the end of 2007. This represents approximately 4000 calls daily that are followed by medical care. The CCA analyzes these data, currently on a weekly basis. This analysis considers the reason for the calls because the terminology used for diagnoses remains very heterogeneous between associations. Bulletins of feedback information devoted to summer or winter diseases — depending on the time of year — are distributed to SOS Médecins France, the CIRE, and the relevant InVS departments.

A scientific committee, established in January 2007, with members from both InVS and SOS Médecins France, defines the orientations of this surveillance system. The topics covered in 2007 concern the development of relevant surveillance indicators, the development of appropriate feedback, improvement in the quality and recording of diagnoses, and the harmonization of the terminology used by the associations.

### Syndromic surveillance in Languedoc-Roussillon

As part of the "Information system for emergency departments" project, the summaries of emergency department visits in the healthcare facilities of Languedoc-Roussillon, centralized by the regional hospital agency, are transmitted to InVS daily. The system has been consolidated over time, as the number of participating departments able to automate and transfer their data increases. At the regional level, the Languedoc-Roussillon interregional epidemiology group (CIRE) analyzes these data, both to detect unusual events and to have information available to assess the situation should a health event be identified. This information has, for example, been used for the heat wave alert or during the surveillance set up for the rugby World Cup in September 2007.

These data reinforce the national representativeness of the OSCOUR network, which initially comprised mainly facilities in the Île-de-France (Parisian metropolitan region). In Languedoc-Roussillon, SOS Médecins in Perpignan and in Nîmes have signed agreements with InVS. They transmit daily the database of their physicians' house calls. These data are then transmitted to the CIRE, which analyzes the reasons for the call, since the diagnosis is, for now, rarely coded in the data that are transmitted. This information rounds out the data transmitted by healthcare facilities and provides useful indications about some of the activity of physicians in private practice.

### Mortality data

Mortality data furnish the third and fourth components of the SURSAUD system. Experiments with the transmission of mortality data, based on vital registry data, took place in 2 phases.

The first was set up with INSEE in June 2004 and made it possible to validate the usefulness of these data. Each participating municipality transmits daily individual data related to the recorded deaths: sex, year of birth, and date of death. Since 2005, this network covers all of the computerized municipal vital registries in metropolitan France and in the overseas districts, that is, 1042 municipalities. They account for nearly 70% of the deaths in France, approximately 1000 deaths a day.

The second phase began in December 2006, when INSERM (CepiDc, the centre for the epidemiology of causes of death) began deployment of electronic death certificates, which it forwards to InVS. This new procedure provides InVS with rapid access — within several hours — to causes of death. The data sent daily to InVS as part of SURSAUD are also made available to the regional epidemiology units in real time by a specific secure website.

### Surveillance of mandatory-reporting diseases

In addition to this syndromic surveillance aimed at new health threats that might not be detected by the classic alert systems, InVS relies on specific surveillance procedures. The primary one is the surveillance of 30 mandatory-reporting diseases, that physicians are required to report.

Mandatory reporting is based on the transmission of individual data to health authorities. It provides an exhaustive collection of data that permit a precise analysis of the situation and trends of the 30 mandatory-reporting diseases in France, to enable preventive activities and programmes appropriate to public health needs. Mandatory reporting is only one of the modes of surveillance of these 30 diseases.
Example of an alert: hepatitis A in Côtes-d’Armor

Between 13-16 August 2007, doctors filed mandatory reports for 4 cases of hepatitis with the Côtes-d’Armor DDASS. On 21 August, DDASS referred the onset of 9 cases in the district to the West interregional epidemiology unit. A retrospective and prospective description of the cases was set up and led to the identification of 111 cases of hepatitis overall in people who lived or had lived in Côtes-d’Armor.

The questionnaire survey showed that the documented cases had all eaten shellfish, 81% of them only oysters, and 87% various shellfish likely to be eaten raw (oysters and many kinds of clams). Moreover, 26 cases in the district from 7 to 22 July had all eaten oysters. The shellfish could be traced for 20: 19 had eaten oysters from the same company, and the 20th had eaten only oysters fished near that company’s farm.

An environmental survey was then conducted on the Paimpol loop, where the company is located. The search for hepatitis A virus in the shellfish, waters, and mud was negative.

These investigations made it possible to describe the epidemic, with a case cluster larger than any yet observed since national hepatitis surveillance began. The results underline the interest of mandatory reporting for early detection of case clusters at the district level. The epidemic in Côtes-d’Armor may have been due to the discharge of wastewater from collective or individual treatment facilities, or even from rain outlets. This confirms the need to limit human and manmade effluent (and to circulate information about these releases in real time, to pursue efforts to improve water quality, and to promote good practices by shellfish producers.

The 30 diseases subject to mandatory reporting

- Acute hepatitis A
- Acute symptomatic hepatitis B infection
- African hemorrhagic fevers
- Anthrax
- Autochthonous malaria
- Botulism
- Brucellosis
- Bubonic plague
- Chikungunya
- Cholera
- Dengue
- Diphtheria
- Exanthematous typhus
- Grouped or clustered food poisoning
- HIV infection, regardless of stage
- Imported malaria in the overseas districts
- Invasive meningococcal disease
- Lead poisoning in children
- Legionellosis
- Listeriosis
- Measles
- Orthopoxviruses including smallpox
- Poliomyelitis
- Rabies
- Suspected Creutzfeldt-Jakob disease and other subacute spongiform encephalopathies transmissible to humans
- Tetanus
- Tuberculosis
- Tularemia
- Typhoid fever and paratyphoid fevers
- Yellow fever