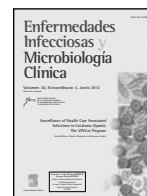




# Enfermedades Infecciosas y Microbiología Clínica

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## The development and successful implementation of the VINCAt Program

Francesc Gudiol<sup>a,b,\*</sup>, Enric Limón<sup>b</sup>, Esther Fondevilla<sup>b</sup>, Josep M. Argimon<sup>c</sup>, Benito Almirante<sup>d</sup> and Miquel Pujol<sup>a,b</sup>

<sup>a</sup>Infectious Diseases Service, Hospital Universitario de Bellvitge, Barcelona, Spain

<sup>b</sup>VINCAt Coordinating Center, Barcelona, Spain

<sup>c</sup>Servei Català de la Salut, Barcelona, Spain

<sup>d</sup>Infectious Diseases Service, Hospital Vall d'Hebron, Barcelona, Spain

### ABSTRACT

**Keywords:**  
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In 2006 the VINCAt Program was established in order to develop and support a standardized surveillance system of hospital-acquired infections (HAI). All acute care hospitals included in the public health system network of Catalonia (Spain) were invited to participate. The aim was to provide risk-adjusted, procedure-specific rates for most relevant infections.

Data are collected by the local multidisciplinary infection control teams and transmitted electronically to the Coordinating Centre, which acts as the core of a network of infection control committees and has the support of a Technical Advisory Committee. The program website provides updated information on program activities, training workshops, aggregated data on past infection rates and access to databases, manuals and protocols.

During the period 2007-2011, 64 hospitals have joined the program: 9 tertiary, 16 district and 39 small hospitals, providing records on 4,044 episodes of catheter-related blood stream infections, 14,389 elective colorectal surgical interventions, 14,214 hip and 29,599 knee arthroplasties, among the most significant indicators.

Nowadays, it appears that VINCAt has been successfully implemented and is well established as the official HAI surveillance program in Catalonia. Determinants for success have been: the maintenance of a close contact between the hospitals and the coordinating center, the timely and regular data feedback to institutions, the program's contribution towards reducing HAIs, the ongoing efforts to improve performance and, a key factor, the perception among the infection control professionals of the value added by the program to their daily work in different ways. Adequate funding, commitment of infection control teams and the generous collaboration of experts from different specialties are essential for maintaining the success of the VINCAt Program.

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**Palabras clave:**  
Vigilancia  
Control de la infección  
Infecciones nosocomiales

### Desarrollo y éxito en la implantación del Programa VINCAt

#### RESUMEN

En el año 2006 se estableció el Programa VINCAt con el fin de desarrollar y mantener un sistema normalizado de vigilancia de las infecciones nosocomiales (HAI). Se invitó a participar a todos los hospitales de agudos incluidos en la red del sistema de salud pública de Cataluña (España). El objetivo era proporcionar las tasas específicas, ajustadas al riesgo, de las infecciones más relevantes asociadas a procedimientos.

Los datos son recogidos por los equipos locales multidisciplinares de control de la infección y transmitidos electrónicamente al Centro Coordinador, que actúa como el núcleo de una red de comisiones de infecciones y cuenta con el apoyo de un Comité Técnico Asesor. El sitio web del programa ofrece información actualizada sobre las actividades del programa, las reuniones técnicas de formación, los datos agregados sobre las tasas de infección y el acceso a bases de datos, manuales y protocolos.

Durante el período 2007-2011, 64 hospitales se han incorporado al programa: 9 hospitales de tercer nivel, 16 medios y 39 centros de pequeño tamaño, proporcionando los registros de 4.044 episodios de infecciones de bacteriemia de catéter, 14.389 intervenciones quirúrgicas electivas colorrectales, 14.214 de cadera y 29.599 artroplastias de rodilla, entre los indicadores más significativos.

\*Corresponding author.

E-mail: fgudiol@bellvitgehospital.cat (F. Gudiol).

Hoy día parece que el Programa VINCAt se ha aplicado con éxito y se ha consolidado como el programa oficial de vigilancia de las HAI en Cataluña. Los determinantes del éxito han sido: el mantenimiento de un estrecho contacto entre los hospitales y el centro coordinador, la retroalimentación de datos de forma puntual y regular a actores e instituciones, la contribución del programa a la reducción de infecciones hospitalarias, los esfuerzos continuados para mejorar el rendimiento y, un factor clave, la percepción entre los profesionales del control de la infección del valor añadido que supone el programa para su trabajo diario. Un soporte económico adecuado, el compromiso de los equipos de control de infección y la generosa colaboración de expertos de distintas especialidades son factores esenciales para mantener el éxito conseguido.

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## Introduction

The importance of hospital-acquired infections (HAIs) as a cause of preventable illness and death has been increasingly recognized in recent years. The prevention and control of these infections has become a priority for governments, the public and health services. Surveillance is a key component of any system that identifies opportunities to prevent HAIs and support continuous quality improvement of healthcare outcomes. Although considerable variation exists in the structure and performance of national and local surveillance systems, most share some basic principles: the local definitions of infection should be in line with nationally agreed-upon definitions, all surveillance should be evidence based and have clear objectives, and organizations should focus on areas of particular local importance. Some of the major challenges of these programs involve keeping the surveillance system active, increasing participation and improving quality over time.

This article seeks to describe the development of a HAI surveillance program in acute care hospitals in Catalonia and discuss the elements necessary for its successful implementation.

## Background

Catalonia is an autonomous community of Spain, with a population of approximately 7,500,000 inhabitants, which currently has a network of 64 hospitals in the public health system under the direction of the Health Department of the Catalan Government. In recent decades, various time-honored initiatives related to the control of HAIs have been developed by various medical and nursing societies, but none of these have provided a uniform and standardized surveillance system for all Catalan hospitals. During this time, other nationwide programs in Spain (including those using data from Catalonia) have been established, such as EPINE, which provides annual infection prevalence rates since 1990, and HELICS ENVIN, which provides adjusted rates of incidence density of device-related infections in intensive care units.<sup>1,2</sup>

In 1999, an analysis was performed on the organization and HAI prevention and control activities of the eight public hospitals belonging to the Institut Català de la Salut (ICS). This analysis showed that surveillance was poorly developed and heterogeneous, with widely varying targets, indicators, definitions and methodology among the hospitals. Their resources for infection control activities were limited, especially in terms of the number of infection control nurses. In response, ICS management promoted the creation of an expert workgroup to implement a standardized HAI surveillance program for its member institutions. This action was complemented by the incorporation of infection control nurses and the training of medical doctors in some institutions. The resulting multidisciplinary, hospital-based program was called *Vigilància de les infeccions nosocomials en els hospitals de l'Institut Català de la Salut* (VINICS). This program continued to develop over the subsequent months, was well accepted by the various infection control committees, and was able to provide aggregate data on the adjusted rates of especially

relevant infections during the period 2000–2005.<sup>3</sup> After this experience, the possibility of refining the program and expanding it to the remaining acute care hospitals was considered feasible and suitable.

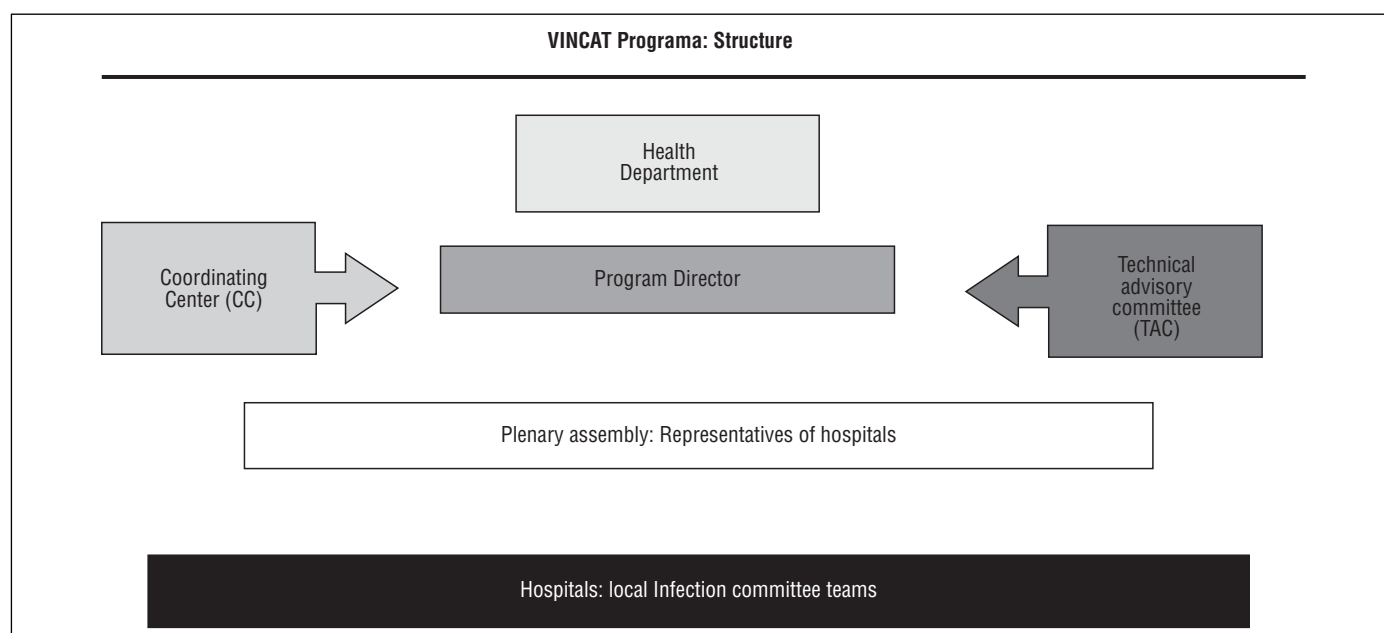
## The VINCAt Program

In 2006, all acute care hospitals included in the public health system network were invited to participate in a new HAI surveillance program, which was given the acronym VINCAt (*Vigilància de les Infeccions Nosocomials a Catalunya*). Its main objectives and philosophy were essentially the same of those established previously by VINICS: the development and support of a standardized HAI surveillance system providing risk-adjusted, procedure-specific infection rates based on the specific work of multidisciplinary infection control teams from the participating hospitals.

### Program structure

The program structure is represented in Figure 1. Each hospital has a representative (preferably a member of the local infection committee team) who acts as a link between the hospital and the program management team. This team consists of the director and the coordination center (CC), composed of a small number of personnel who have the support of a technical advisory committee (TAC), which includes experts from different specialties. The hospitals, divided into three categories according to their size and complexity, must have a multidisciplinary team sufficient to perform active surveillance, and have computer support and capacity for Internet data transmission. Based on their data and the aggregated data from other hospitals, each hospital must design their own intervention strategies for improving outcomes. The CC must perform the following activities: *a*) collect, review and analyze data sent by hospitals; *b*) submit periodic reports to hospitals of their own data and the aggregated data; *c*) edit and update the program website, especially the procedures manual; *d*) provide real-time advice on conceptual and methodological problems, and *e*) provide education and specific training for infection control teams. The TAC meets three times a year and must monitor the development of program objectives and key results, as well as technical and methodological aspects and the analysis of new proposals. In 2011, small working groups were created, each led by a TAC member, in order to collaborate more actively with the CT in analyzing data on the indicators of the main surveillance objectives, to promote the implementation of specific preventive measures and to keep the program updated.

Representatives of hospitals, CC and TAC meet once a year in a plenary assembly to review yearly results, publish an action plan for the coming year and reflect on the commitment and formal participation of institutions in the various objectives. The results and activities related to the monitoring of antimicrobial use are presented and discussed at a special meeting with representatives of the pharmacy departments.



**Figure 1.** VINCAT Program: structure.

### Surveillance objectives

a) Overall prevalence of HAIs; b) Nosocomial blood stream infections rates; c) Surgical site infections rates; d) Nosocomial infections rates in ICUs; e) surveillance of multiresistant organisms, f) monitoring of in-hospital use of antimicrobials. These objectives were proposed by the program management team with the guidance of the TAC and a broad consensus among the infection control committees. Consideration was given to the clinical and epidemiological relevance of the objectives and achievability for all hospitals according to their resources. Based on this consideration, some indicators were considered mandatory and others optional. The various indicators of the main surveillance objectives and their definitions can be seen in detail on the program website.<sup>4</sup> The methodology and definitions used were based largely on those of the Centers for Disease Control and the National Healthcare Safety Network, with local adaptations and pertinent updates. During 2011, two new surveillance objectives were added, which are still in the early stages of development. These objectives are monitoring infections in long-term care facilities and monitoring of catheter-related bacteremia in neonatal units and pediatric intensive care.

### Communication and training

The CC acts as the core of a network of infection control committees for the various sites. Structured communication is maintained through the program website and regular visits to the hospitals, while direct communication to resolve daily problems and concerns is conducted by e-mail or telephone. Training courses and workshops on technical aspects related to the various indicators, as well as meetings for presentation and discussion of results and further recommendations are conducted periodically. The program website, managed by the CC, provides updated information on program activities, aggregate data on past infection rates and access to databases, manuals and protocols. The data collected by the infection control teams are transmitted electronically to the CC. Most surveillance indicators have their own online databases, and VINCat data is stored using the Patient Registry software application, which is incorporated in the CatSalut information systems. This integration provides automatic identification of patients using personal codes that ensure the protection and confidentiality of personal data.

Access to the information system is restricted through the use of usernames and nontransferable passwords, with encrypted data transmission using a secure server.

### Results

The program has collected definitive data over four years (2007-2010) on the initially established surveillance objectives, although data from 2007 should be considered preliminary. Relevant results are presented in specific articles throughout this special issue. Data for 2011 are still in the process of being cleaned and analyzed. There has been significant participation by institutions from the start, which has increased over the years, especially among smaller hospitals. During this five-year period (2007-2011), 64 hospitals have joined the program: 9 tertiary hospitals, 16 district hospitals and 39 small hospitals, providing records on 4,044 episodes of catheter-related bloodstream infections, 14,389 elective colorectal surgical interventions, 14,214 hip arthroplasties and 29,599 knee arthroplasties, among the most significant indicators. The evolution of the participation in relevant objectives can be seen in Table 1.

### Determinants for Success

Given the high and increasing level of participation of the institutions, the reliability of the data obtained and the satisfaction expressed by the professionals and stakeholders, it appears that VINCat has been successfully implemented and is now well established as the official HAI surveillance program in Catalonia. Various publications and official documents have defined the characteristics that a surveillance system must have to meet their main objectives. The initial design of our program considered the recommendations of these documents<sup>5-7</sup> as well as the experience of similar programs that had been successfully implemented in other countries, such as the VICNISS program in Australia<sup>8,9</sup> or the KISS program in Germany<sup>10,11</sup>. The main requirements indicated by the leaders of these programs for building an effective public health surveillance system and maintaining long-term success include: a) adequate resourcing, including the development of specific software, and the establishment of a coordination center with multidisciplinary staff; b) close contact between the participating hospitals and the coordination center; c) ongoing efforts to improve the system,

**Table 1**  
Participation of Acute Care Hospitals in the VINCat Program

	2007	2008	2009	2010
Overall prevalence of HAIs	21	46	49	63
Catheter-related BSI	25	39	38	39
SSI in knee arthroplasties	39	43	46	53
SSI in elective colorectal surgery	39	43	43	48
Device-associated infections in ICUs	16	21	21	28
Surveillance of MRSA	18	38	40	40
Surveillance of <i>Clostridium difficile</i>	0	0	30	24
Antimicrobial use	39	45	46	49

\*Number of hospitals participating in various indicators for each calendar year.  
BSI: bloodstream infection; HAIs: healthcare-associated infections; ICUs: Intensive Care Unit; MRSA: methicillin-resistant *Staphylococcus aureus*.

including new epidemiological knowledge and improved data validation and analysis methods; *d*) timely and regular data feedback to the institutions, and *e*) publicizing the program's contribution towards reducing HAIs. All of these requirements have been included in our program and have undoubtedly been of great importance. However, in our opinion, these determinants do not fully explain the success of VINCat. We believe that a key factor in the success is the perception by professionals of the value added by the program to their work in the following ways: *a*) the program reinforces the concept of infection control teams as recognizable and well established structures in the hospital; *b*) it encourages multidisciplinary teamwork, enhancing the role of infection control nurses; *c*) it offers real time information about local data through immediate online access to the database, and *d*) it provides frequent, free and high quality training to healthcare workers. These benefits are relevant to all institutions but especially small hospitals, which constitute a substantial part of the program.

In summary, it appears that healthcare workers involved in infection control perceive the program as an improvement in their professional situation, an advance in terms of health outcomes achievable as a group, and an additional motivation for improving their performance. The commitment of infection control teams and the generous collaboration of experts from different specialties belonging to the TAC are essential for maintaining the success of the VINCat Program. Continued success is one of our goals in the upcoming years along with increased funding, improved the quality of data and the incorporation of new approaches and objectives.

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## Conflicts of Interest

All authors declare that they have no conflicts of interest in this article.

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