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Study on the
requirements and options
for RFID application
in healthcare

Identifying areas for
Radio Frequency
Identification deployment
in healthcare delivery:
A review of relevant literature

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Executive Summary

This Report presents the findings of the first phase of a study to identify the policy options that can assist the development and applications of RFID in the delivery of safe and high quality care. The objectives of this first phase - the foundation upon which the rest of the study will be built on - were:

- first, to identify and discuss the most relevant areas for deployment and use of RFID in healthcare
- second, to shed light on the most important enablers, obstacles and uncertainties that have the potential to influence RFID use in healthcare applications
- finally, to include a discussion of other alternatives to RFID technologies.

A thorough, systematic review of all relevant literature was conducted to generate a comprehensive overview of the existing information. Peer-review literature and ‘grey’ literature, including various organisations’ reports, presentation material and commercial publications, were identified and searched. An electronic database was created to record the findings. Data were abstracted and recorded in a specially created summary template, then summarised and analysed. We categorised the findings according to RFID-enabling function (tracking, identification and authentication, automatic data collection and transfer, and sensing) and subject (staff, patients, assets and clinical trials). The database included 325 items.

Overall, findings indicate that tracking is the **key RFID enabling function** used when the technology is applied to staff and assets; when applied to patients, then the key objective is identification and authentication; when used in clinical trials, RFID’s primary function is automatic data collection and transfer. Automatic data collection and transfer is an RFID function also frequently used in relation to assets, staff and patients. Finally, RFID is employed for sensing, most often in relation to patients, but also to assets.

The analysis identified five categories of **enablers for the further dissemination of RFID in healthcare**.

1. RFID’s capacity to enable better healthcare delivery
2. The clear business case for certain RFID applications
3. The use of sound implementation approaches
4. The technological superiority of RFID applications
5. The existence of government incentives/support for healthcare RFID

Similarly, the identified **barriers and obstacles** to RFID's wider-scale implementation are also classified into five categories.

1. Direct RFID costs
2. Privacy, security, data integrity and legal issues
3. Technical issues
4. Operational/ managerial challenges
5. Cultural and ethical concerns

Our review of the literature indicates that there are four RFID functional domains in which RFID can be supplemented or complemented by **other technologies**:

- i) object/person identification
- ii) data transfer from RFID tags to other tags/ the environment/ back-office applications
- iii) sensing/ telemetry/ diagnosis
- iv) integrating health-information infrastructures.

With respect to the first two functions, the relationship between RFID and the individual technologies performing these functions can be both complementary and substitutive. The relationship between RFID and the technologies performing the latter two functions, however, is clearly complementary (both by the judgment of the reviewed sources and by the complimentary natures of the technologies).

Overall, our structured literature search and analysis revealed that not only does a large functional range of RFID applications in healthcare exist, but applications, trials and pilots evaluating these applications are already emerging.