Human Factors Considerations for Privacy Properties in Home Healthcare Systems

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Abstract
Privacy properties for remote/home-based healthcare systems have been proposed, but human factors issues involved in implementing those properties have received little consideration. We reviewed proposed privacy properties and identified human factors issues associated with successful implementation of these properties. Implementations that do not take the users into account will most likely fail to accomplish their privacy and security goals.

Human Factors Recommendations for Privacy Properties in Home Healthcare Systems

General: Without being designed for use by all stakeholders (e.g., patient, provider), the privacy provided by remote/home healthcare systems will be less than desired.

Privacy Property 1: The privacy policy and consent materials must be aimed toward the user’s abilities and concerns, allowing effective communication.

Privacy Properties 2, 3, and 4: The username-password combination is an acceptable authentication method for many purposes, because it is easy to implement and has high user familiarity and acceptance.
- Various ways to improve the security provided by passwords, while making them memorable for users, should be implemented.
- Special characteristics of patients must be considered.
- Stronger forms of authentication, though possibly less usable, should be used for situations in which the users are trained personnel and security is very critical.

Privacy Property 5: Users’ perception and performance with the interface should be evaluated with respect to different design variables (e.g., type of users, situations of use, the PHI involved, and the technologies used).
- Older and/or disabled patients’ cognitive and physical capabilities should be addressed to ensure the patients’ autonomy.

Privacy Properties 6, 7, and 10: Issues regarding intrusion detection need to be addressed. Regular inspection of system audit logs is necessary, but better methods need to be developed that allow system administrators to easily detect changes in data and unusual usage patterns.

Privacy Property 8: Various ways of reducing human errors and mistakes in data entry and modification should be considered and implemented.
- For control of the information, patients’ misunderstandings may result in their failing to give consent to inclusion of critical PHI in their record

Privacy Property 9: Sensors should be designed for usability by patients.
- Issues include how best to alert patients when recording systems are activated.

Reference