

## Privacy-Preserving Partner Notification Service to Control Sexually Transmitted Infections

Christine Kakalou<sup>a</sup>, Eleftheria Polychronidou<sup>b</sup>, Vicky Drosou<sup>b</sup>, Vlasios K. Dimitriadis<sup>a</sup>, Thomas Dermaris<sup>a</sup>, Rafael Kordonias<sup>b</sup>, Aris Papaprodromou<sup>b</sup>, Triantafillos Tsirelis<sup>b</sup>, Christos Maramis<sup>a</sup>, Konstantinos Votis<sup>b</sup>, Dimitrios Tzouvaras<sup>b</sup>, Domenico Savarino<sup>c</sup>, Manuel Maffeo<sup>d</sup>, Nedim Jasic<sup>e</sup>, Tatjana Nemeth Blažič<sup>f</sup>, Zoran Dominković<sup>g</sup>, Dubravko Pogledić<sup>g</sup>, Iva Jovovic<sup>h</sup>, Agne Simkunaite-Zazacke<sup>i</sup>, Loreta Stonienė<sup>i</sup>, Antonella Sammut<sup>k</sup>, Lella Cosmaro<sup>c</sup>, Pantelis Natsiavas<sup>a</sup>

<sup>a</sup> Institute of Applied Biosciences, Centre for Research & Technology Hellas, Themi, Thessaloniki, Greece

<sup>b</sup> Information Technologies Institute, Centre for Research & Technology Hellas, Themi, Thessaloniki, Greece

<sup>c</sup> Fondazione LILA Milano - Italian League for Fighting AIDS, Italy

<sup>d</sup> Arcigay, Italy

<sup>e</sup> Croce Rossa Italiana, Italy

<sup>f</sup> CIPH Croatian Institute of Public Health, Croatia

<sup>g</sup> Iskorak, Croatia

<sup>h</sup> Life Quality Improvement Organisation "Flight", Croatia

<sup>i</sup> ULAC/CCDA Centre for Communicable Diseases and AIDS, Lithuania

<sup>j</sup> RPLC Republican Center for Addictive Disorders, Lithuania

<sup>k</sup> Public Mental Health Services. Ministry for Health, Malta

### Abstract

Partner Notification (PN) processes are typically part of wider combination prevention efforts and focus on the notification of sexual partners to prevent Sexually Transmitted Infections (STIs), including Human Immunodeficiency Viruses and viral hepatitis. We present a free, voluntary, anonymous and GDPR-compliant Partner Notification service that offers enhanced security and privacy through a web and mobile application via a unique random codes.

### Keywords:

HIV Infections, Sexually Transmitted Diseases, Contact Tracing.

### Introduction

Partner Notification (PN) is a process which focuses on the identification and the voluntary notification of sexual partners, to prevent the transmission of STIs. The INTEGRATE Joint Action<sup>1</sup> has developed RiskRadar; a free, publicly available web and mobile toolkit to support combination prevention, testing and linkage to care activities for STIs and Tuberculosis<sup>2</sup>. In this poster we present RiskRadar's technical solution to support the PN process while also trying to tackle any privacy issues.

### Methods

The methodology for the development of the INTEGRATE PN service is presented in Figure 1. Firstly a comprehensive desk review identified relevant Information and Communication Technologies (ICT) tools which were reviewed and ranked regarding their suitability to the purpose and the adaptability to

accommodate the relevant disease areas. The highest-ranking tools were used to drive the proposal for the initial design of RiskRadar. During this process data security and privacy was highlighted as one vital limitation of existing tools, which was also identified by the respective literature [1]. The development phase applied an iterative design and prototype development process; the PN service prototypes were presented to relevant stakeholders to tailor it to the identified priority groups and to ensure its correct adaptation to all four diseases. Furthermore the effective communication strategies proposed by ECDC and WHO were adopted during the design phase.

To address the major security and privacy considerations, a Data Protection Impact Assessment was composed specifically for the PN service component of RiskRadar. Access control is implemented to avoid any misuse of the PN service, in the form of a unique random passcode provided to the index patient by an authorised healthcare professional.

### Results

RiskRadar's PN service is available through a web and mobile app for index patients that can be accessed only via the generated passcodes while the backend handles the unique passcode generation, and the SMS sending mechanism. To maintain privacy, log encryption and pseudonymisation of the phone numbers were applied; in addition, the phone numbers are automatically and permanently deleted from the system once the notification messages are delivered to the recipients.

<sup>1</sup> <https://integrateja.eu/>

<sup>2</sup> <https://integrateja.eu/riskradar/>

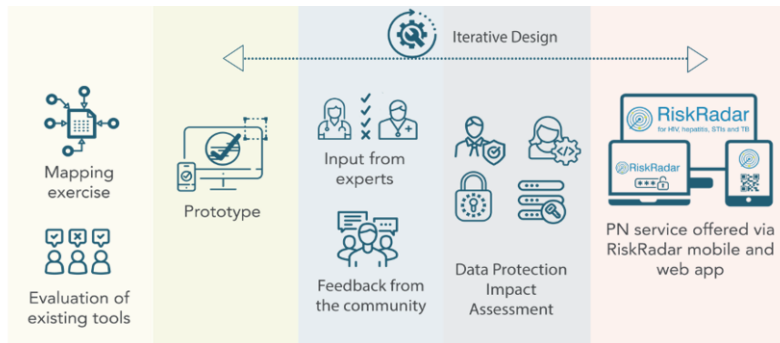


Figure 1. Methodology for the development of the Partner Notification service

The RiskRadar website is freely accessible to anyone and the RiskRadar app is freely available to download from the official stores<sup>3,4</sup>. The index patient can access the PN component through the web application or the dedicated mobile app. Then he/she is prompted to type or scan the issued passcode (see Figure 2a) and once the code is decrypted (see Figure 2b), the user can enter the mobile phone number(s) of sexual partners to be

notified. The partners receive an SMS notifying them of a possible exposure to an STI (including HIV and hepatitis) and recommending that they get tested, offering a link to the Test Finder functionality of RiskRadar while also providing contact information for testing points nearby for linkage to testing and care (see Figure 2c).

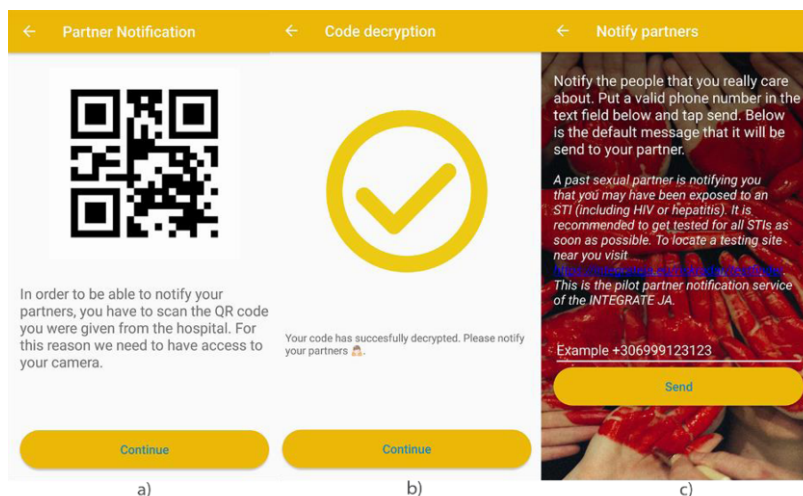


Figure 2. Passcode decryption and notification message on the RiskRadar mobile app.

## Conclusions

The presented PN service emphasizes the importance of secure, anonymous and voluntary partner notification through a digital solution. We argue that piloting the proposed service within a variety of target populations would highlight its usefulness in mitigating the inherent ethical, privacy-related and cost-effectiveness concerns in traditional PN approaches.

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## References

- [1] J. Gibbs et al. , “Can you recommend any good STI apps?” A review of content, accuracy and comprehensiveness of current mobile medical applications for STIs and related genital infections., *Sex. Transm. Infect.* **93** (2017) 234–235. doi:10.1136/sextrans-2016-052690.

## Address for correspondence

Christine Kakalou, Institute of Applied Biosciences, Centre for Research & Technology Hellas, Thessaloniki, Greece, email: [ckakalou@certh.gr](mailto:ckakalou@certh.gr)

<sup>3</sup> <https://play.google.com/store/apps/details?id=com.tdermaris.integratetoolkit>

<sup>4</sup> <https://apps.apple.com/app/id1469764662>