

System for Surveillance and Investigation of Disease Outbreaks

[Extended Abstract]

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ABSTRACT

Information technology contributes greatly in improving people's health. Through our interaction with different communication channels such as social media, telephone calls or purchasing over-the-counter medicines, we emit signals and leave trails of information related to our health. Information that can be used to understand our health situation. Some of these communication channels are more structured, filtered and suited for evaluation, as a result they require less demanding filtration and analysis than others. One such channel is the Swedish National Telephone Health Service 1177, where professional healthcare personnel assist and give advice to callers. The main aim of this work is to detect point source outbreaks. For this purpose a project called Event-based Surveillance System (ESS) was initiated to develop a system for surveillance and detection using the former mentioned information source. The system is currently running and is used to notify local authorities whenever a deviation in the telephone traffic pattern is recorded.

1. INTRODUCTION

The ESS project has developed a system for syndromic detection and surveillance of disease outbreaks using mainly triage data from the Swedish National Telephone Health Service 1177 to support health officials in their work. The data is currently updated daily and analysed in Excel. A statistical analysis algorithm[1] is used in order to calculate deviation limits. Whenever the deviations get more frequent a defined alert score increases. The alert score in turn has a threshold for which a notification about a possible disease outbreak is issued and the related authorities are contacted. This setup is currently running for four Swedish counties which have expressed interest in receiving this information. One of the goals of this project is to include all counties

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in Sweden. One of the important features of this system is the ability to detect substantial disease outbreaks and localise them. Which is a big help to authorities in order to be able to react more swiftly, thus saving money and improving healthcare.

2. FUTURE WORK

The current objectives of the project is to improve and develop the surveillance system further. Among other things we are developing a decision support system for the purpose of relating relevant information to different current and future recipients involved. This in order to get maximal benefit from the system.

3. CONCLUSIONS

The goal is to deliver a more robust and automated system that needs little or no maintenance. A crucial part of this work is understanding what the different medical phrases and symptoms actually mean and how to translate and categorise them into more understandable terms and into possible known diseases. Another important point is to not forget the importance of being able to relate and share the information derived with health officials.

4. ACKNOWLEDGMENTS

This work is largely based on the results of the study[1] comparing different communication channels in order to find the most suitable data sources for detection of disease outbreaks. The study was used already known historical disease outbreaks in Sweden as a reference. The project is funded by the Swedish Civil Contingencies Agency, and is a cooperation between the Public Health Agency of Sweden and Stockholm County Council.

5. REFERENCES

- [1] T. Andersson, P. Bjelkmar, A. Hulth, J. Lindh, S. Stenmark, and M. Widerstrom. Syndromic surveillance for local outbreak detection and awareness: evaluating outbreak signals of acute gastroenteritis in telephone triage, web-based queries and over-the-counter pharmacy sales. *Epidemiology and Infection*, 2013.