Hochschule für Angewandte Wissenschaften Hamburg
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Diplomarbeit

Surveillance in Europa

Benchmarking von nationalen Surveillance-Systemen

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Vorwort

Die vorliegende Diplomarbeit wurde von Prof. Dr. Ralf Reintjes (Hochschule für Angewandte Wissenschaften Hamburg, Deutschland und Universität Tampere, Finnland) betreut.

Die in der Diplomarbeit dargestellten Hintergrundinformationen zu Surveillance von Infektionskrankheiten im internationalen Kontext werden genutzt für den Inhalt des Buchkapitels *Surveillance, Kontrolle und Prävention von Infektionskrankheiten - eine internationale Aufgabe*. Der Fachartikel wird in Zusammenarbeit mit Prof. Dr. Ralf Reintjes verfasst und erscheint in dem Buch *Globalisierung – Gerechtigkeit – Gesundheit* - Eine *international vergleichende* Einführung in *Public Health (*Prof. Dr. Oliver Razum, PD Dr. Hajo Zeeb und Prof. Dr. Ulrich Laaser, Hrsg. Hans Huber Verlag, Bern).

Das von der Europäischen Union (EU) geförderte *Twinning Light* Projekt zwischen Deutschland und Ungarn mit dem Titel *Microbiological safety institution building at National Public Health and Medical Officer Service in Hungary* war der Anstoß für die Durchführung eines Benchmarking von nationalen Surveillance-Systemen*. Das Twinning Light* Projekt (*Twinning* = Zwilling*, Light* = Kurzzeit - 6 bis maximal 8 Monate) lief im Rahmen der europäischen *Institution Building Programme* und diente der Unterstützung des ungarischen Gesundheitsdienstes während der Eingliederungszeit in die EU. Die deutschen *Public Health* Experten aus den Bereichen Mikrobiologie, Virologie und Surveillance, arbeiteten in unterschiedlichen Teilprojekten an der Verbesserung der epidemiologischen Sicherheit von Infektionskrankheiten in Ungarn. Das Teilprojekt *Benchmarking National Surveillance Systems - A new tool for the integration of Communicable Disease Surveillance and Control in Europe*, wurde unter der Leitung von Prof. Dr. Ralf Reintjes und in Zusammenarbeit mit Dr. Ralf Reiche (Wissenschaftliches Institut der Ärzte Deutschlands, Bonn) durchgeführt und in Ungarn präsentiert. Eine Veröffentlichung dieser Studie in einer Fachzeitschrift ist bereits angestrebt.

Zur Verbesserung des ungarischen Surveillance-Systems im Bereich der sexuell übertragbaren Krankheiten (englisch: STIs) und zur Intensivvisierung der Teilnahme an europäischen Netzwerken von STIs dient die Anfertigung des Berichtes *Surveillance of Sexually Transmitted Infections in a Hungary and European Perspective*. Hierfür wurde ein einmonatiges Praktikum im nationalen Institut für Epidemiologie in Budapest, Ungarn absolviert.

Für die Möglichkeit an den genannten Aktivitäten aktiv mitzuarbeiten, danke ich Herrn Professor Dr. Ralf Reintjes sehr. Sein Engagement Studenten zu fördern und seine fachliche

Kompetenz, schätze ich sehr, weshalb es mich besonders ehrt, während meinem Studium mit ihm wissenschaftlich gearbeitet zu haben.

Ich danke Zita Schillmöller (Hochschule für Angewandte Wissenschaften Hamburg), dass sie als Korreferentin fungiert hat. Ihre vielen inhaltlichen Hinweise und Anmerkungen, sowie unsere fachlichen Diskussionen waren mir eine große Hilfe.

Dr. Ralf Reiche (Wissenschaftliches Institut der Ärzte Deutschlands, Bonn), Dr. Ágnes Csohán (Nationales Institut für Epidemiologie, Budapest), Dr. Horst-Gerhard Baumeister (nordrhein-westfälisches Landesinstitut für den Öffentlichen Gesundheitsdienst, Münster) und allen von mir europaweit kontaktierten *Public Health* Experten gebührt Dank für deren Informationen und überaus hilfsbereite Unterstützung.

Des Weiteren möchte ich meiner Familie, meinen Kommilitonen und Freunden danken, die mich während des Studiums motiviert und begleitet haben.

In der Arbeit wird die neue Rechtschreibform verwendet und auf eine gesonderte Aufführung der jeweils weiblichen Form verzichtet. Die Verwendung der maskulinen Form schließt Männer und Frauen gleichermaßen ein. Die Arbeit enthält im Anhang Berichte und Präsentationen in englischer Sprache.

Zusammenfassung

Effektive nationale sowie internationale Surveillance-Systeme sind notwendig, um Veränderungen im Auftreten von Krankheiten frühzeitig zu erkennen. Eine gut funktionierende Zusammenarbeit, in Form eines frühzeitigen Austauschs von Daten und Informationen zwischen den Ländern, bildet die Grundlage für Surveillance von Infektionskrankheiten in Europa.

Neben der Darstellung von Surveillance von Infektionskrankheiten mit dem Fokus auf grenzübergreifende Surveillance in Europa, vergleicht diese Arbeit nationale Surveillance-Systeme aus sechs europäischen Ländern (Ungarn, Deutschland, England und Wales, Finnland, Frankreich und den Niederlanden). Der Vergleich wurde in Form eines *Benchmarking* durchgeführt, mit dem Ziel Stärken und Schwächen des ungarischen Surveillance-Systems zu identifizieren. Ausgewählte Kriterien wie beispielsweise die Anwendung von Falldefinitionen, Frühwarnsysteme und epidemiologische Ausbruchsuntersuchungen wurden verglichen und bewertet.

Die Arbeit zeigt, dass Ungarn ein gut funktionierendes Meldesystem für Infektionskrankheiten hat. Der Vergleich mit den fünf anderen europäischen Ländern zeigte jedoch auch, dass noch Potential zur Qualitätssteigerung vorhanden ist. Verbessert werden können insbesondere das Umwandeln von Daten zu Informationen und die generelle Durchführung von analytischen Ausbruchsuntersuchungen zur Aufklärung der Infektionsquelle. Diese und weitere Handlungsempfehlungen wurden an die ungarischen Entscheidungsträger vermittelt.

Ein Goldstandard für Surveillance-Systeme in europäischen Ländern ist aufgrund der unterschiedlichen Ressourcen und Belastungen schwierig zu entwickeln. Dennoch kann ein entsprechender Datenaustausch funktionieren, wenn ein gemeinsames Verständnis von Methoden und Definitionen gegeben ist. Dann können epidemiologische Informationen, für eine auf Fakten gestützte europäische Gesundheitspolitik, eingesetzt werden.

Abstract

Effective national and international surveillance systems are needed to identify the occurrence and trends of infectious diseases immediately. A functioning networking like early data exchange between European countries are necessary to have a good European surveillance system for communicable disease control and prevention system.

The thesis describes surveillance of infectious diseases with a special focus on transnational surveillance networking in Europe. In addition the thesis demonstrates a benchmarking of surveillance systems from six European countries (Hungary, Germany, England & Wales, Finland, France, The Netherlands). The study aimed to identify strengths and weaknesses of the Hungarian surveillance system. The Benchmarking processes were performed with selected criteria (e.g. case definitions, early warning applications and outbreak investigations) in order to analyse and describe them.

It becomes obvious that Hungary has in general a well functioning communicable disease control and prevention system. Nevertheless other countries perform better in some areas, e.g. data analysis and early warning applications. Therefore different practical examples from surveillance systems selected in the study were demonstrated. Finally recommendations were given to the Hungarians stakeholders.

A gold standard of surveillance systems in various European countries is very difficult to achieve, because of heterogeneity in e.g. disease burden, personal and financial resources. However a data exchange is functioning, if a common understanding of methods and case definition is given. Then it is possible that epidemiological information can be used in the public health policies for prevention and control measures.

Inhaltsverzeichnis

Abkürzungsverzeichnis

AIDS	Aquired Immune Deficiency Syndrome (deutsch: erworbenes Immunschwächesyndrom)
BSN	Basic Surveilllance Network
CDC	Centers for Disease Control and Prevention
ECDC	European Centre for Disease Prevention and Control (deutsch: Europäisches Zentrum für die Prävention und die Kontrolle von Krankheiten)
Enter-net	International Surveillance Network for the Enteric Infections Salmonella and verocytotoxin-producing Escherichia coli
EPIET	European Programme for Intervention Epidemiology Training
EU	European Union
EWGLI	European Working Group for Legionella Infections
EWRS	Early Warning und Response System
IfSG	Infektionsschutzgesetz
ISIS	Infectieziekten Surveillance Informatie Systeem (deutsch: Infektionskrankheiten-Surveillance-Informations-System)
LÖGD	Landesinstitut für den Öffentlichen Gesundheitsdienst
RKI	Robert Koch-Institut
SARS	Severe Acute Respiratory Syndrome (Schweres akutes Atemnotsyndrom
STIKO	Ständige Impfkommission
WHO	World Health Organisation

Abbildungs- und Tabellenverzeichnis

1 Einleitung

Die Sorge über bestehende, neue und wieder auftretende Infektionskrankheiten wie AIDS, SARS oder Tuberkulose, sowie die Tatsache, dass die Bedrohung durch Infektionskrankheiten eine globale Dimension hat, haben die Anstrengungen bei der Überwachung übertragbarer Krankheiten auf nationaler sowie auf internationaler Ebene verstärkt [vgl. MacLehose et al. 2001, Weinberg 2001]. Die Wahrscheinlichkeit, dass mögliche Ausbrüche übertragbarer Krankheiten mehr als ein Land betreffen, wird auch in Europa insbesondere durch die Entwicklung des Binnenmarktes mit seinem freien Warenverkehr und das Recht der Bürger, sich in der Europäischen Union (EU) frei zu bewegen und in einem Mitgliedsland der Wahl zu leben oder zu arbeiten, vergrößert. Obendrein ist in den letzten Jahren der Reiseverkehr zwischen EU-Ländern und dem Rest der Welt erheblich angestiegen. Dies bedarf einer internationalen Zusammenarbeit in den Bereichen Surveillance, Kontrolle und Prävention von Infektionskrankheiten [vgl. Hawker et al. 2005]. Effektive nationale sowie internationale Surveillance-Systeme sind notwendig, um Veränderungen im Auftreten von Krankheiten frühzeitig zu erkennen. Auf dieser Grundlage können gesundheitspolitische Präventionskonzepte entwickelt und beurteilt sowie effektive Maßnahmen in der gesundheitswissenschaftlichen Praxis umgesetzt werden. Dabei sollten die ausgewählten Maßnahmen auf die Besonderheiten gefährdeter Bevölkerungsgruppen (oder Länder) zugeschnitten werden. Derzeit werden in Europa Netzwerke und moderne Methoden zur Harmonisierung und Internationalisierung infektionsepidemiologischer Surveillance umgesetzt und weiterentwickelt [vgl. Krämer und Reintjes 2003]. Vor diesem Hintergrund widmet sich dieses Kapitel dem Terminus Surveillance von Infektionskrankheiten. Die wichtigsten Begrifflichkeiten und Komponenten sowie die Geschichte von Surveillance sollen einen Einstieg in die Thematik geben. Um die Unterschiedlichkeiten im Aufbau und der Organisation der einzelnen nationalen Surveillance-Systeme in Europa zu verdeutlichen, werden einzelne Kriterien verglichen. Am Beispiel der Studie *Benchmarking of national Surveillance Systems* [vgl. Reintjes et al. 2005] wird die Methode *Benchmarking* erörtert. Surveillance, Kontrolle und Prävention sind zentrale Instrumente von grenzübergreifenden gesundheitswissenschaftlichen Aktivitäten. Daher wird die europäische Zusammenarbeit der infektionsepidemiologischen Surveillance vertiefend beschrieben und erläutert.

2 Was ist Surveillance?

Surveillance ist die Beobachtung der Verbreitung von Krankheiten oder die Gesundheit beeinflussende Faktoren in der Bevölkerung. Sie beinhaltet eine systematische und kontinuierliche Sammlung und Übermittlung von Daten, die Verarbeitung und Auswertung der Daten, sowie deren Interpretation [vgl. Langmuir 1963]. Das Prinzip der Surveillance definiert sich durch einen Regelkreislauf. Die Hauptakteure in diesem Regelkreis sind zum einen die Beteiligten an der Patientenversorgung und die medizinisch-mikrobiologischen Laboratorien, zum anderen die öffentlichen Gesundheitsdienste, an die die entdeckten Erreger und Erkrankungen gemeldet werden. Die erhobenen Daten werden analysiert, interpretiert und führen somit zu neuen Informationen [vgl. Bühler 1998]. Durch eine schnelle Aufklärung von Gesundheitsgefahren und die Darstellung von Trends, kommt es zu fokussierter Handlungskompetenz für Präventionsmaßnahmen. Surveillance liefert „Daten für Taten“ [vgl. CDC 1988]. Folglich ist Surveillance der erste Schritt zur Prävention gegen Infektionskrankheiten.

Effektive Surveillance im internationalen Kontext hängt von dem Aufbau und der Umsetzung der jeweiligen nationalen Surveillance-Systeme und der Koordination der internationalen Kooperationen ab. Die Überwachung von Infektionskrankheiten auf internationaler Ebene ist eine verhältnismäßig junge Aktivität und befindet sich in einem kontinuierlichen Entwicklungsprozess.

3 Geschichtliche Entwicklungen

Die Idee sowohl Mortalitäts- als auch Morbiditätsdaten als Grundlage für gesundheitspolitische Entscheidungen zu verwenden, entstand in Europa mit dem Aufkommen der wissenschaftlichen Denkweise während der Renaissance vor circa 600 Jahren. Bereits aus dem 14. Jahrhundert liegen Dokumente vor, die darüber Aufschluss geben, dass Präventionsmaßnahmen auf Basis entsprechender Beobachtungen durchgeführt wurden [vgl. Eylenbosch und Noah 1988]. Die zweite Hälfte des neunzehnten Jahrhunderts brachte neue revolutionäre Erkenntnisse über Auslöser und Übertragung von mikrobiologischen Erregern. Erste Bestrebungen einer international organisierten Surveillance und Kontrolle fanden 1851 mit der internationalen Gesundheitskonferenz (ISC) in Paris statt. Das Ziel war die Übereinkunft von einheitlichen Quarantänevorschriften, um die Verbreitung von Cholera, Pest und Gelbfieber zu verhindern [vgl. Howard-Jones 1975].

Im 20. Jahrhundert wurde die Surveillance in Europa verstärkt und ausgeweitet. Unter der Schirmherrschaft der Weltgesundheitsorganisation (WHO) entstanden eine Reihe wichtiger Programme, die internationale Zusammenarbeit zwischen Ländern und Institutionen erforderte. Methoden der Datensammlung, Datenanalyse und Informationsverbreitung wurden erweitert und methodische Fragen bekamen einen erhöhten Stellenwert. Seit den 50er Jahren prägte die Entwicklung auf dem Gebiet der Surveillance in den USA verstärkt die europäische Surveillance. Durch Aktivitäten des *Communicable Disease Center* (CDC) in Atlanta, dem heutigen US *Centers for Disease Control and Prevention*, wurde die infektionsepidemiologische Surveillance in Europa, als Methode für die Beobachtung der Inzidenz von Infektionskrankheiten in Populationen, aufgebaut. Während dieser Zeit wurde Surveillance zu einem der wichtigsten Instrumente bei den Kontroll- und Eliminierungsbestrebungen für Erkrankungen wie Poliomyelitis, Masern, Tollwut, und für die spätere Eradikation der Pocken [vgl. van Loock 1994]. Im Jahre 1965 wurde die epidemiologische Surveillance-Einheit *Division of Communicable Diseases* der Weltgesundheitsorganisation (WHO) gegründet. Es erfolgte erstmals die Veröffentlichung eines internationalen Berichtes durch die WHO über die Verbreitung von Infektionskrankheiten. In den letzten Jahren sind eine Reihe von europäischen Surveillance-Programmen, gefördert durch die EU und WHO, initiiert worden. Im Jahr 2005 nahm das neu eingerichtete Europäische Zentrum für die Prävention und die Kontrolle von Krankheiten (englisch: *European Centre for Disease Prevention and Control*, ECDC), seine Arbeit auf.

4 Komponenten von Surveillance-Systemen

Da die Aufrechterhaltung und Verbesserung der öffentlichen Gesundheit eine staatliche Aufgabe darstellt, basieren auch viele Aufgabenbereiche eines Surveillance-Systems auf rechtlichen Grundlagen. Es werden Mindestanforderungen an die Surveillance von Infektionskrankheiten gestellt, und die Rechte und Pflichten des Surveillance-Systems gegenüber den Bürgern eines Staates bestimmt. Hierbei ist stets zwischen den Rechten der infizierten Individuen, von denen eine potentielle Gefahr ausgeht und der Bevölkerung, die vor dieser Gefahr geschützt werden soll, abzuwägen [vgl. Litz et al. 2002]. Im Gesetz verankerte übertragbare Krankheiten, die bei Verdacht auf Infektion, Erkrankung oder Tod dem Gesundheitsamt gemeldet werden müssen, werden als meldepflichtige Infektionskrankheiten bezeichnet. Zur Meldung verpflichtet sind im Allgemeinen die Akteure der Patientenversorgung (in der Regel der behandelnde Arzt) und die medizinisch-mikrobiologischen Laboratorien. Es wird im Wesentlichen zwischen der namentlichen und der anonymen Meldepflicht unterschieden. Gesetzlich meldepflichtige Infektionskrankheiten sollten eine Public Health Relevanz aufweisen. Das bedeutet, es ist zu empfehlen, sich auf Infektionskrankheiten zu konzentrieren, die verhindert werden können, häufig auftreten, zu einer signifikanten Morbidität führen, mit einer hohen Mortalität verbunden sind oder durch multiresistente Organismen verursacht werden [vgl. Krämer und Reintjes 2003]. Falldefinitionen sind für jedes epidemiologische Surveillance-System von grundlegender Bedeutung. Sie definieren, welche Erscheinungsformen einer Krankheit überwacht werden sollen. Generell gliedern sich Falldefinitionen in kurze Beschreibungen des klinischen Bildes und in Laborkriterien. Daraus werden Definitionen für mögliche, wahrscheinliche und bestätigte Fälle entwickelt [vgl. Ammon 2005]. Falldefinitionen gewährleisten die Anwendung gleicher Maßstäbe über einen bestimmten Zeitraum und bestimmter geographischer Bereiche hinweg [vgl. Krämer und Reintjes 2001]. Die Anwendung der Falldefinitionen gewährleistet, dass die Meldedaten auf nationaler und internationaler Ebene vergleichbar sind. In der Surveillance von Infektionskrankheiten werden verschiedene Daten- und Informationsquellen genutzt. Beispielsweise finden gesetzliche Meldedaten, Krankenhausdaten oder Todesursachenstatistiken hier Anwendung. Da der Sinn und Zweck epidemiologischer Surveillance-Systeme darin besteht, Trends und mögliche Probleme im Verlauf der Zeit zu erkennen, sollten nur die Informationen gesammelt werden, die zur korrekten Analyse und Interpretation der Daten benötigt werden. Deuten die aus den Daten gewonnenen Surveillance-Informationen zum Beispiel auf einen möglichen Krankheitsausbruch hin, kann eine epidemiologische Studie entworfen und ausgeführt werden, die das Ereignis auf wissenschaftlicher Basis untersucht.

Zeitreihenanalysen, räumliche - bzw. geographische Analysen und Subgruppenanalysen auf der Basis von erwarteten und beobachteten Häufigkeiten, sind quantitative Werkzeuge in der Datennutzung. Die Fälle können nach Zeit, Ort, betroffenen Personen, Schwere und Ergebnis in Kategorien eingeteilt werden. Ausgangswerte der Häufigkeit von Ereignissen werden benötigt, um Unterschiede in den erwarteten und beobachteten Raten zu berechnen. Je nach Häufigkeit der Erhebung, d.h. täglich, wöchentlich oder monatlich, sollten die Daten analysiert werden. Um epidemiologische Surveillance-Daten zu nutzen, bedarf es einer systematischen, elektronischen Verarbeitung, Auswertung und Umsetzung in Informationen, die dann an die relevanten Einrichtungen und Personen, aus Politik, Wissenschaft, Medizin und Öffentlichkeit, weitergeleitet werden. Epidemiologische Surveillance-Daten sollten zeitnah analysiert werden, da Surveillance nicht nur dem Zweck dient Infektionskrankheiten zu zählen und zu verzeichnen, sondern Probleme schnell zu erkennen und die Verbreitung der Erkrankungen einzugrenzen. Die Rückkopplung der Informationen spielt eine zentrale Rolle für das langfristige Funktionieren eines Surveillance-Systems. Zusammenarbeit ist keine Einbahnstraße! Informationen sollten in Form einer Rückmeldung an die zur Meldung verpflichteten Personen und Einrichtungen zurückgeleitet werden [vgl. Krämer und Reintjes 2003]. Daraus können neue Entscheidungen in der Gesundheitspolitik abgeleitet und eingesetzt werden. Einfache, verständliche Berichte haben sich als am effektivsten erwiesen. Empfehlenswert ist dabei die Verwendung von optischen Darstellungen (z.B. Graphiken und Dia-

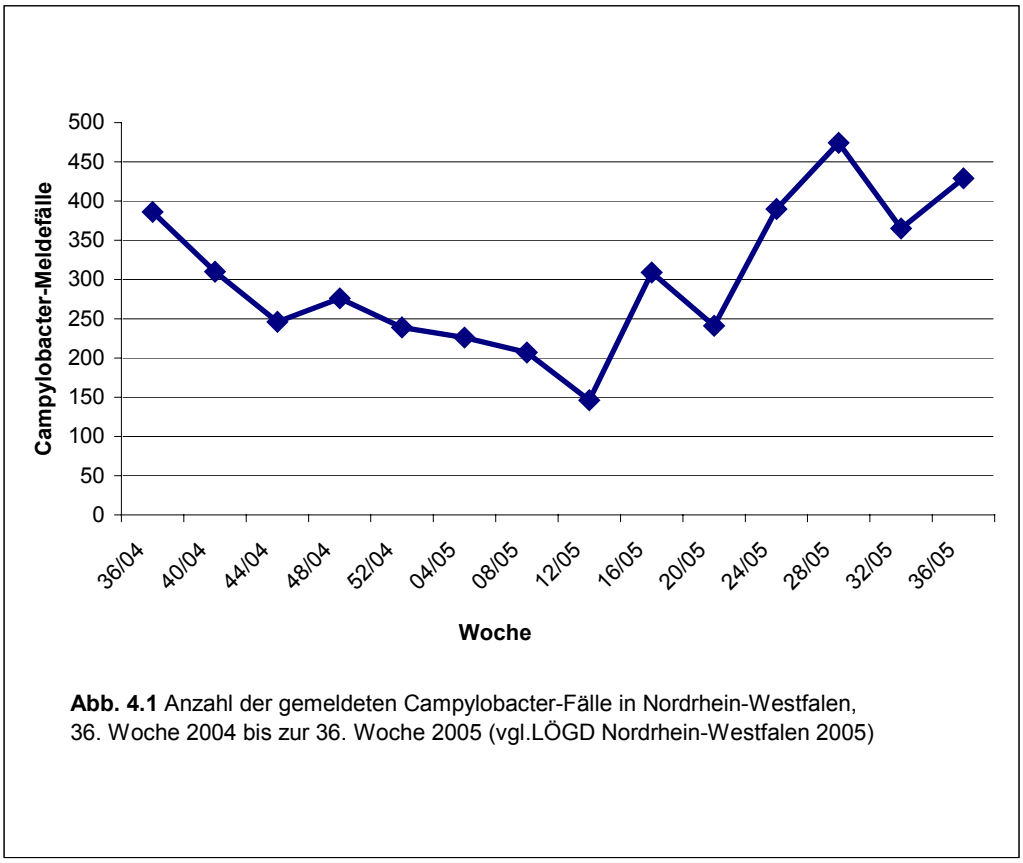
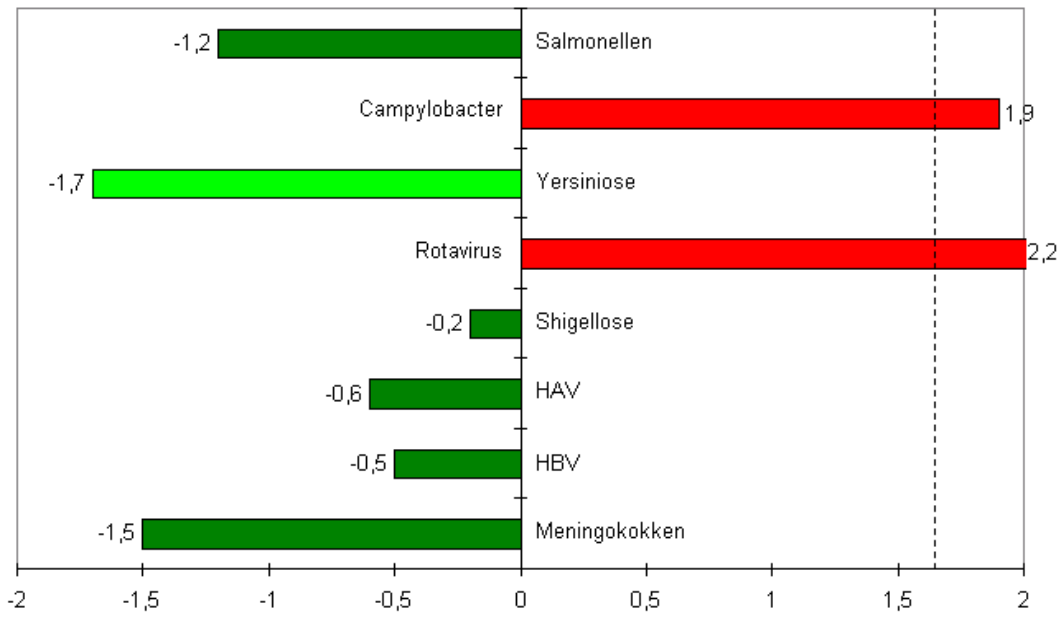


Abb. 4.1 Anzahl der gemeldeten Campylobacter-Fälle in Nordrhein-Westfalen, 36. Woche 2004 bis zur 36. Woche 2005 (vgl.LÖGD Nordrhein-Westfalen 2005)

grammen). Die Abbildung 4.1 verdeutlicht die Ansicht, dass wichtige Trends besser durch Graphiken erfasst werden können als in einem rein schriftlichen Text.

Ein gutes Beispiel für die Verwendung von Daten und deren Umwandlung in Informationen bietet das Landesinstitut für den Öffentlichen Gesundheitsdienst in Nordrhein-Westfalen. Um eine regelmäßige, schnelle Übersicht über den aktuellen Stand des Infektionsgeschehens in der Bevölkerung zu gewinnen, wurde in Nordrhein-Westfalen das Infektionskrankheiten-Barometer (www.loegd.nrw.de/1aim-berichte/) eingeführt. Das Barometer deutet auf mögliche Veränderungen gemeldeter Häufigkeiten von Erkrankungen hin. Die gezeigten Abweichungen beziehen sich auf Erwartungswerte, die aus Vergleichsdaten der Vorjahre errechnet werden. Dieses Barometer dient somit als Instrument für eine zeitnahe Identifikation von Erkrankungshäufigkeiten [vgl. Reintjes et al. 2001] (siehe Abbildung 4.2).



Das Barometer repräsentiert die Abweichungen der Anzahl der Meldungen der letzten 4 Wochen vom Erwartungswert. Dieser berechnet sich anhand von 15 Perioden der letzten 5 Jahre mit Bezug auf den Beobachtungszeitraum. Ein Wert kleiner Null weist auf weniger Meldungen, ein Wert größer Null auf mehr Meldungen als erwartet hin. Der Grenzwert von 1,65 entspricht der zweifachen Standardabweichung. Werte, die diese Grenze überschreiten, deuten auf eine Abweichung hin, die möglicherweise nicht allein auf den Zufall zurückzuführen ist.

Abb. 4.2: Infektionskrankheiten-Barometer des Landesinstituts für den Öffentlichen Gesundheitsdienst Nordrhein-Westfalen (Stand zum Ende der Woche 36/2005)

5 Nationale Surveillance-Systeme im Vergleich

Schwierige Aspekte, bei der Weiterentwicklung einer gemeinsam organisierten infektionsepidemiologischen Surveillance in Europa, liegen an den unterschiedlich organisierten nationalen Surveillance-Systemen. Derzeit existieren in den 25 Ländern der EU 27 verschiedene nationale Surveillance-Systeme, die sich in der Struktur, im Design und in der Qualität unterscheiden [vgl. Desenclos 1994, Fenton 2004]. Alle 25 Mitgliedsländer haben eigene Gesetzesgrundlagen, die die Meldung und Überwachung von Infektionskrankheiten regeln. Zusätzlich bestehen allein in Großbritannien drei gesetzlich unabhängig voneinander organisierte Surveillance-Systeme, eins für England und Wales, eins für Schottland und eins für Nordirland [vgl. Hawker et al. 2005]. Die Anzahl der meldepflichtigen Infektionskrankheiten variieren zwischen den EU-Mitgliedsländern. Seit dem Inkrafttreten des deutschen Infektionsschutzgesetzes (IfSG) im Jahr 2001, gelten in Deutschland 22 Krankheiten als meldepflichtig. Zusätzlich sind mikrobiologische Laboratorien gesetzlich zur Meldung von 47 Erregern an das zuständige Gesundheitsamt verpflichtet. Darüber hinaus haben 6 Erreger den Status, dass sie direkt von den Laboratorien ohne personenbezogene Daten an das Robert Koch-Institut (RKI) gemeldet werden müssen [vgl. Robert Koch-Institut 2005]. Im Vergleich, werden in Ungarn 69 Infektionskrankheiten mit und 13 Infektionskrankheiten ohne personenbezogene Daten gemeldet. In Frankreich, werden insgesamt 26 Infektionskrankheiten gemeldet. Diese Beispiele zeigen die starken Disparitäten, die zwischen den nationalen Surveillance-Systemen der verschiedenen europäischen Länder bestehen. Daraus ergibt sich die Schwierigkeit Prävalenzen und Inzidenzen von Infektionskrankheiten in Europa zu vergleichen.

Um die Häufigkeit von Infektionskrankheiten international miteinander zu vergleichen, bedarf es einheitlicher Falldefinitionen. Im Jahr 2002 verabschiedete das Europäische Parlament Richtlinien zur Definition von Infektionskrankheitsfällen, um einen repräsentativen Vergleich von Falldefinitionen in den Mitgliedsländern anzustreben [vgl. Commission Decision 2002]. Obwohl einheitliche Falldefinitionen die Grundlage einer gemeinsamen Surveillance in Europa sind, bestehen derzeit starke Unterschiede bei der Nutzung von Falldefinitionen und deren Inhalt innerhalb der europäischen Mitgliedsländer. Im deutschen Meldesystem für Infektionskrankheiten richten sich die Akteure nach den vom RKI aufgestellten Falldefinitionen. Diese sind in Anlehnung an die EU-Klassifizierungen entwickelt worden. Ebenfalls arbeiten Länder wie Frankreich oder die Niederlande mit vergleichbaren Falldefinitionen, die auch dort in Anlehnung an die EU-Richtlinien formuliert wurden. Daneben arbeiten andere Länder wie beispielsweise Finnland und Ungarn mit eigenen Falldefinitionen, die nicht nach dem Klassifizierungsschema der EU konzipiert sind. Außerdem gibt es Länder, die innerhalb ihres

Surveillance-Systems überwiegend ohne Falldefinitionen arbeiten. Dazu gehören beispielsweise England und Wales [vgl. Reintjes et al. 2005].

Nutzung und Analyse der nationalen Daten erfolgen in den Ländern auf unterschiedliche Art und Weise. Ein erwähnenswertes Überwachungssystem für Infektionskrankheiten, ist das niederländische *Infektionskrankheiten-Surveillance-Informations-System* (ISIS). Dieses erweist sich in der Praxis als ein Instrument zur schnellen Identifizierung von Krankheitsausbrüchen [vgl. Sprenger et al. 1997]. ISIS kombiniert meldepflichtige Infektionskrankheiten mit freiwilliger epidemiologischer Surveillance von Erkrankungen und Erregern. Gleichzeitig werden dabei neben den Gesundheitsämtern auch die medizinisch-mikrobiologischen Laboratorien in den Gesamtprozess der epidemiologischen Surveillance integriert. Unterstützt durch einheitliche Falldefinitionen, standardisierte Meldeformulare und moderne Kommunikations- und Informationstechnologien können so zeitnahe und relevante Informationen generiert werden. ISIS stellt täglich aktualisierte Informationen über Infektionserkrankungen und -erreger über das Internet (http://www.isis.rivm.nl) zur Verfügung [vgl. Krämer und Reintjes 2005].

Weitere Unterschiede zwischen den europäischen Ländern zeigen sich bei den nationalen Impfprogrammen und dem Impfstatus in der Bevölkerung. Länder wie beispielsweise Großbritannien, Finnland oder die Niederlande haben ein zentral organisiertes Impfsystem. Dagegen werden in Deutschland Impfungen durch die Ständige Impfkommission (STIKO) beim RKI empfohlen. Bei der Betrachtung des Impfstatus der einzelnen Länder, zeigen sich ebenfalls starke Abweichungen. In Deutschland ist der Impfstatus im Vergleich zu anderen Ländern sehr gering (z.B. ~ 80 % bis 85 % Impfschutz bei Säuglingen zwischen 0 bis 24 Monate für Masern, Mumps und Röteln). Im Gegensatz hierzu besteht zum Beispiel in der ungarischen Bevölkerung ein Impfschutz gegen Maser, Mumps und Röteln von über 99% [vgl. Reintjes et al. 2005]. Die verpflichtende Impfung per Gesetz ist hierbei wohl einer der wesentlichen Gründe für den hohen Impfschutz. Zusätzlich können unterschiedliche nationale Impfkampagnen die angedeuteten Disparitäten mit beeinflussen.

Anhand der Darstellung der verschiedenen Komponenten von Surveillance-Systemen werden die Unterschiede in der praktischen Umsetzung von Surveillance, Kontrolle und Prävention von Infektionskrankheiten in den EU-Mitgliedsländern deutlich. Generell kann die Surveillance von Infektionskrankheiten in jedem Mitgliedsland nur dann erfolgreich sein, wenn die nationale Infektionsepidemiologie in der Lage ist, im erforderlichen Ausmaß, qualitätsgesicherte Daten und Informationen zeitnah zur Verfügung zu stellen [vgl. Ammon 2005]. Es gilt, die etablierten Strukturen weiterzuentwickeln, um die Effektivität und Effizienz und damit

die Qualität der einzelnen nationalen Systeme zu verbessern. Benchmarking kann hier eine Hilfestellung geben.

6 Benchmarking von nationalen Surveillance-Systemen

Benchmarking, als ein im Bereich der Produktion entwickeltes und aus der Industrie stammendes Instrument zur kontinuierlichen und systematischen Verbesserung von Unternehmenskulturen und -prozessen, findet zunehmend auch Anwendung im gesundheitswissenschaftlichen Sektor [vgl. Bornemeier 2002]. Ein internationaler Erfahrungsaustausch und das Streben nach Bestleistungen können zu Qualitätssteigerungen von nationalen Surveillance-Systemen führen. Die von der EU geförderte Benchmarking-Studie zwischen dem ungarischen Surveillance-System und fünf anderen europäischen Systemen zeigte, dass Verbesserungspotentiale übernommen werden können [vgl. Reintjes et al. 2005]. Die Hochschule für Angewandte Wissenschaften Hamburg war unter der Leitung von Prof. Dr. med. Ralf Reintjes (Professor für Epidemiologie, Surveillance und Public Health) im europäischen Projekt zwischen Deutschland und Ungarn mit dem Titel "*Microbiological safety institution building at National Public Health and Medical Officer Service in Hungary"* vertreten. Es diente der Unterstützung des ungarischen Gesundheitsdienstes während der Eingliederungszeit in die EU. Deutsche Public Health Experten aus den Bereichen Mikrobiologie, Virologie, Epidemiologie und Surveillance, arbeiteten in unterschiedlichen Teilprojekten an der Verbesserung der epidemiologischen Sicherheit von Infektionskrankheiten in Ungarn. Das Teilprojekt *Benchmarking National Surveillance Systems in Europe* hatte das Ziel Stärken und Schwächen des ungarischen Surveillance-Systems zu identifizieren. Dazu wurde zwischen nationalen Surveillance-Systemen aus sechs europäischen Ländern (Ungarn, Deutschland, England und Wales, Finnland, Frankreich und den Niederlanden) ein Vergleich angestellt. Ausgewählte Kriterien wie beispielsweise die Anwendung von Falldefinitionen, Frühwarnsysteme, epidemiologische Ausbruchsuntersuchungen und Impfprogramme wurden verglichen und bewertet. Die Studie zeigt, dass Ungarn ein gut funktionierendes Meldesystem für Infektionskrankheiten hat. Jedoch im Vergleich mit fünf anderen europäischen Ländern finden sich für Ungarn Potential zur Qualitätssteigerung. Hervorzuheben sind hierbei die Verbesserung der Umsetzung von Daten zu Informationen und die generelle Durchführung von analytischen Ausbruchsuntersuchungen zur Aufklärung der Infektionsquelle. Diese und weitere Handlungsempfehlungen wurden als Ergebnis an die ungarischen Entscheidungsträger vermittelt. Die Studie beweist, dass Benchmarking auch in der Gesundheitsversorgung eine anwendbare Methode ist. Darüber hinaus wurde empfohlen weitere Benchmarking Projekte in diesem Feld zukünftig von Institutionen wie das ECDC in Stockholm durchzuführen, um weiterhin eine epidemiologischen Sicherheit gegen übertragbare Krankheiten innerhalb Europas zu gewährleisten. Sich mit internationalem Benchmarking im Bereich Surveillance auseinander zu setzen bedeutet somit, kontinuierlich das Wissen Dritter in Anspruch zu nehmen und vom Know-how anderer Surveillance-Systeme, zu profitieren. Der ausführliche Benchmarking

Bericht wird im Anhang 1 dargestellt. Um nicht nur die Fachöffentlichkeit über neue Methoden in der Surveillance für Infektionskrankheiten zu informieren, wurde diese Aktivität in der Presse veröffentlicht. Somit gewinnt der Laie ebenfalls einen Einblick in die Forschung von Gesundheitswissenschaften im europäischen Kontext (siehe Anhang 2). Ein Beispiel für Benchmarking im Bereich der sexuell übertragbaren Krankheiten zeigt der Bericht in Anhang 3. Hierbei wurden sechs nationale Surveillance Systeme in Europa hinsichtlich verschiedener Komponenten der sexuell übertragbaren Krankheiten verglichen, um einen weiteren Beitrag zur Verbesserung der ungarischen Surveillance zu liefern. Darüber hinaus, wird es zunehmend wichtiger, in der infektionsepidemiologischen Surveillance auch grenzüberschreitende Netzwerkarbeit zu leisten und entsprechende Kooperationen zu realisieren.

7 Grenzüberschreitende Surveillance

Transregionale Kooperationen zwischen EU-Nachbarländern haben eine lange Tradition. Seit 1958 bilden die sogenannten Euregios Arbeitskreise von Gemeinden, Städten und Kreisen zwischen europäischen Nachbarländern. Darüber hinaus arbeiten Behörden, Industrie- und Handelskammern oder Arbeitgeber- und Arbeitnehmerorganisationen transnational, mit vergleichbaren Organisationen der Nachbarländer, zusammen. Die ca. 60 grenzüberschreitenden Kooperationen in Europa haben das Ziel, die Lebenssituation der Menschen in den Grenzregionen zu verbessern [vgl. Freund & Feldhoff 2000]. Eine Vorbildfunktion hat der Zusammenschluss zwischen Deutschland, den Niederlanden und Belgien. Entlang der deutsch-niederländischen und der deutsch-belgischen Grenze haben sich in Nordrhein-Westfalen grenznahe Kommunen zu vier sogenannten Euregios zusammengeschlossen. Im Kontext der infektionsepidemiologischen Surveillance veröffentlichte die Euregio Maas-Rhein ihren ersten transnationalen Gesundheitsbericht im Jahr 2000. Im Vordergrund des Projektes stand der Versuch, Daten anhand relevanter Gesundheitsindikatoren in einem einheitlichen Verfahren zu erheben und zusammenzufügen. Diese können für eine grenzüberschreitende Gesundheitspolitik genutzt werden. Das nordrhein-westfälische Landesinstitut für den Öffentlichen Gesundheitsdienst (lögd) erforscht derzeit die grenzüberschreitenden Gesundheitsprojekte in europäischen Grenzgebieten. Ein Schwerpunkt liegt dabei auf Projekten und Initiativen mit direktem Einfluss auf Mobilität in der grenzüberschreitenden Gesundheitsversorgung (z.B. *cross-border patient flow*). Die aus der Evaluation gewonnenen Informationen können von anderen Euregios genutzt werden und so zu Synergieeffekten führen [vgl. Euregio 2005].

8 Europäische Netzwerke

Die Entscheidung 2119/98/EC des Europäischen Parlamentes vom September 1998 legt die Etablierung eines europäischen Netzwerks für die Überwachung von Infektionskrankheiten fest [vgl. Commission Decision 1998]. Die Basis dieses EU-Netzwerkes stellen die vorhandenen nationalen Überwachungssysteme der europäischen Mitgliedsländer. Das Netzwerk verfolgt zum einen das Ziel, die epidemiologische Surveillance von Krankheiten auf europäischer Ebene zu etablieren und zum anderen, die Errichtung eines Frühwarn- und Reaktionssystems zur Prävention und Bekämpfung von Infektionskrankheiten zu unterstützen. Parallel dazu wurden „horizontale“ Aktivitäten und krankheitsspezifische Netzwerke realisiert [vgl. Sprenger et al. 1998].

Horizontale Programme verfolgen übergreifend das Ziel, die Kommunikation zwischen den beteiligten nationalen Institutionen zu fördern und gleichzeitig, für die Vereinheitlichung der verwendeten Surveillance-Methoden zu sorgen. Das europäische Trainingsprogramm für Interventionsepidemiologie (englisch: European Programme for Intervention Epidemiology Training, EPIET) soll die Infrastruktur für eine effektive internationale Zusammenarbeit bilden. Während einer zweijährigen Weiterbildung arbeiten Epidemiologen überwiegend in einem nationalen Institut für Epidemiologie und Surveillance innerhalb eines anderen EU Mitgliedslandes als das ihres Heimatlandes. Das Ziel ist die Bildung einer Expertengruppe, die über internationale Erfahrung mit der Arbeit in verschiedensten Surveillance-Systemen verfügt [vgl. van Loock et al. 2001].

Einer der bekanntesten horizontalen Aktivität ist die Zeitschrift *Eurosurveillance* (www.eurosurveillance.org). Mit Hilfe von Eurosurveillance sollen Informationen zu Präventionsmaßnahmen innerhalb des Netzwerks schnell und zuverlässig verbreitet werden. Innerhalb Europas stehen verschiedene Datenbanken für Akteure im Gesundheitswesen, Wissenschaftler und öffentliche Personen zur Verfügung. Das „Basic Surveillance Network“ bietet eine Datenbank zu den nationalen Häufigkeiten verschiedenster Infektionskrankheiten. Da die Netzwerke unabhängig voneinander beantragt wurden, haben sich innerhalb dieser Projekte zwangsläufig uneinheitliche Verfahrensweisen entwickelt (hinsichtlich der inhaltlichen Schwerpunkte, der Verfahrensweisen zur Auswertung der Daten sowie zur Information der Netzwerkpartner und der weiteren Fachöffentlichkeit) [vgl. Ammon 2005]. Abbildung 8.1 gibt einen Einblick in die Vielfalt infektionsepidemiologischer Netzwerke, welche aus unterschiedlichen Ländern koordiniert werden.

Tabelle 8.1 Übersicht einer Auswahl europäischer Netzwerke zur Überwachung von Infektionskrankheiten [vgl. Ammon 2005; Hawker et al. 2005]

1	**Übergreifendes Netzwerk** **BSN** (Basic Surveillance Network
2.	**Sexuell/durch Blut übertragbare Erkrankungen** **Euro-HIV** (European Centre for the Epidemiological Monitoring of AIDS), **ESSTI** (European Surveillance of Sexually Transmitted Infections)
3.	**Impfpräventable Erkrankungen** **ESEN** (European Seroepidemiology Network), **ELWGD** (European Laboratory Working Group on Diphtheria), **EUVAC-NET** (Surveillance Community Network for Vaccine Preventable Infectious Diseases), **EU IBIS** (European Union Invasive Bacterial Infections Surveillance)
4.	**Zoonosen/ Lebensmittel-bedingte Erkrankungen** **Enternet** (International Surveillance Network for the Enteric Infections Salmonella and VTEC) **DIVINE-NET** (Prevention of emerging (food-borne) enteric viral infections: diagnosis, viability testing, networking and epidemiology)
5.	**Respiratorische Erkrankungen** **Euro-TB** (European Surveillance of Tuberculosis), **EISS** (European Influenza Surveillance Scheme), **EWGLINet** (European Working Group for Legionella Infections)
6	**Antibiotikarestistenz/Nosokomiale Infektionen** **EARSS** (European Antimicrobial Resistance Surveillance Consumption), **ESAC** (European Surveillance of Antimicrobial Consumption) **HELICS** (Hospitals in Europe Link for Infection Control through Surveillance)
7	**Andere** **ENIVD** (European Network for Imported Viral Diseases) **EUNID** (European Network of Infectious Diseases physicians)

Exemplarisch für die Aufgaben und Arbeitsweisen von krankheitsspezifischen Netzwerken sind das *International Surveillance Network for the Enteric Infections Salmonella and verocytotoxin-producing Escherichia coli* (Enter-net) und *European Working Group for Legionella Infections* (EWGLI) zu nennen:

Enter-net zielt auf die Meldung von gastrointestinalen Infektionskrankheiten aus den teilnehmenden Ländern, um europaweit Informationen liefern zu können. Der Schwerpunkt der Untersuchungen liegt auf Salmonellosen und Escherichia-coli-O157-Infektionen. Das nationale Institut für die Überwachung von Infektionskrankheiten von England und Wales koordiniert Enter-net. Neben den EU-Mitgliedsländern sind die Schweiz und Norwegen in dem Netzwerk angeschlossen [vgl. Krämer und Reintjes 2003]. Das folgende Beispiel macht die Notwendigkeit einer internationalen Kooperation mit den verschiedensten nationalen und internationalen Gesundheitsbehörden deutlich:

Beispiel: Internationaler Ausbruch von Salmonelloseerkrankungen verursacht durch Schokolade aus Deutschland

Internationale Netzwerke wie das Enter-net sind unverzichtbar, in der Überwachung, Prävention und Kontrolle von Ausbrüchen die mehr als ein Land betreffen. Mit Hilfe internationaler Surveillance-Systeme und einer schnellen Informationsweitergabe können zügig Präventionsmaßnahmen gegen weitere Erkrankungsfälle eingeleitet werden.
Salmonellosen sind durch Bakterien verursachte Erkrankungen bei denen Durchfall im Vordergrund steht. Daneben sind Bauchschmerzen, Übelkeit, Erbrechen und Fieber möglich. Die Symptome dauern in der Regel nur wenige Stunden oder Tage an. Enteritis-Salmonellen werden meist durch den Verzehr kontaminierter Lebensmittel übertragen (vgl. RKI 2005). In Deutschland gehören Salmonellosen zu den häufigsten gemeldeten Infektionskrankheiten. Im Jahr 2001 wurden 77.185 Salmonellose-Fälle (Inzidenz: 94/100.000) gemeldet. Von Oktober 2001 bis März 2002 lag die Zahl der bundesweit gemeldeten Erkrankungen durch eine Subspezies, S. Oranienburg, mit 439 gemeldeten Fällen deutlich über den erwarteten Fallzahlen. Gleichzeitig wurden über das Enter-net Netzwerk eine ansteigende Fallzahl von S. Oranienburg in anderen europäischen Ländern notiert (siehe Abbildung 8.1). Dieser Ausbruch wurde in Deutschland in Zusammenarbeit den Behörden des öffentlichen Gesundheitsdienstes, Referenzlabore und den für die Lebensmittelsicherheit zuständigen Veterinärbehörden, jeweils von der Bundes- bis zur Kreisebene deskriptiv und analytisch (Fall-Kontroll-Studie) untersucht. Zusätzlich startete das Netzwerk Enter-net eine internationale Identifizierung von weiteren Salmonellose-Fällen, indem eine Aufforderung zur Meldung von Fällen und relevante Informationen an andere Länder versendet wurde. Als verursachendes Lebensmittel konnte kontaminierte Schokolade identifiziert werden. Die Produktionschargen der identifizierten Schokolade wurden vom Markt zurückgezogen. Trotz moderner Herstellungstechnologien in Schokoladenfabriken besteht weiterhin ein wenn auch geringes Risiko von infizierten Schokoladenprodukten [vgl. Werber et al. 2005]. Die internationale Ausbreitung dieser Krankheitshäufung zeigt, wie schnell ein kontaminiertes Lebensmittel (in diesem Fall Schokolade) in andere Länder exportiert werden kann.

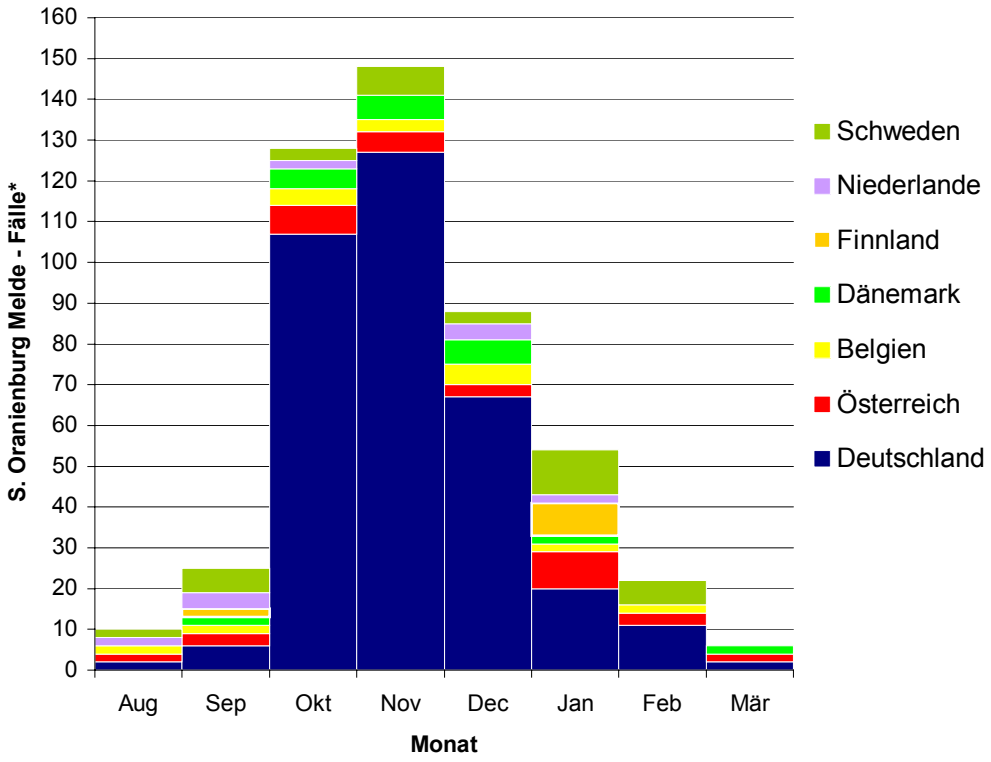


Abb. 8.1: Gemeldete Fälle von Salmonella Oranienburg in sieben europäischen Ländern, August 2001 - März 2002 [modifiziert nach Werber et al. 2005, Daten aus Deutschland: Robert Koch-Institut: SurvStat@rki 2005]

* Gemeldete Fälle (außer aus Deutschland) stammen vom Enter-net Surveillance Netzwerk, bei dem die gesammelten Daten nicht notwendigerweise Meldefälle sein müssen. D.h. sie werden zum Teil aus anderen Datenquellen, wie z.B. den nationalen Referenzlaboratorien gesammelt.

EWGLI ist ein Netzwerk zur Überwachung mit Auslandsreisen assoziierten Legionnaire-Erkrankungen. Das Netzwerk umfasst inzwischen 36 Länder. Ziel dieses Netzwerkes ist es, Häufungen von Erkrankungsfällen zu entdecken und somit mögliche gemeinsame Ursachen zu identifizieren. Die Koordination von EWGLI liegt beim Nationalen Institut für die Überwachung von Infektionskrankheiten von England und Wales [vgl. Krämer und Reintjes 2003].

Neben den krankheitsspezifischen Netzwerken, spielt das EU indizierte Frühwarnsystem *Early Warning und Response System* (EWRS) eine zentrale Rolle. Es besteht aus einem Web-basierten, Passwort-geschützten Meldesystem für wichtige Informationen, die schnell an alle Mitgliedsländer gehen sollen. Die Entscheidung 2119/98/EC verpflichtet die Mitgliedsländer, Informationen über das Auftreten von auf EU-Ebene meldepflichtigen Infektionskrankheiten sowie die in diesem Zusammenhang getroffenen Maßnahmen, an die anderen Mitgliedsländer und die Kommission weiterzuleiten [vgl. Commission Decision 1998]. Neuauftretende Infektionskrankheiten müssen von den Mitgliedsländern ebenfalls sofort gemeldet werden. Nach Meldung einer Epidemie findet eine Risikobewertung statt, und es werden Sofortmaßnahmen beschlossen, die eine weitere Ausbreitung verhindern sollen. Insbesondere muss über neue Infektionskrankheiten informiert werden, wenn zur Bekämpfung ein EU-weit koordinierter Ansatz notwendig ist. In einer Reihe von Netzwerk-internen Arbeitsdokumenten wurden weitere Konkretisierungen getroffen, die aber, zur Zeit der Veröffentlichung dieses Buches, noch erprobt werden. Alle Mitgliedsländer waren sich einig, dass damit ein guter Austausch von Informationen, insbesondere über geplante Maßnahmen, möglich war, dass jedoch die Informationsflut mit 10-20 Meldungen pro Tag (neben den anderen eingehenden Informationen) zum Teil nicht mehr verarbeitet werden konnten. Inzwischen gibt es auch in allen Mitgliedsländern und der Kommission eine 24-Stunden Kontaktmöglichkeit, sodass in Notfällen Ansprechpartner vorhanden sind [vgl. Ammon 2005].

Die EU-Erweiterung hatte auch eine Ausdehnung des Aufgabenspektrums der Netzwerke zur Folge. Die schrankenlose, räumliche Ausdehnung geht mit einer steigenden Mobilität und Reisefreudigkeit der EU-Bürger einher. Diese Tatsache macht die Notwendigkeit einer guten Organisation, in Gestalt eines europäischen Zentrums, deutlich. Im April 2004 verabschiedete das Europäische Parlament die Errichtung des Europäischen Zentrums für die Prävention und die Kontrolle von Krankheiten, ECDC [Regulation (EC) No. 851/2004]. Im Mai 2005 nahm das ECDC seine Funktion auf. Die primäre Aufgabe des ECDC ist die Koordination von epidemiologischen Surveillance-Netzwerken und Aktivitäten in Europa. Es koordiniert ohne regulative Macht die Bereiche Surveillance und Labornetzwerk, Frühwarnsystem, Technische Unterstützung der Mitgliedsländer und Kommunikation. Es ist vorgesehen, eine Datenbank für die EU-weiten Surveillance-Daten zu etablieren, um krankheitsspezifische Surveillance-Daten der einzelnen Netzwerke zu vereinheitlichen und zu koordinieren. Da das Zentrum keine eigenen Laboratorien haben wird, soll ein Netzwerk aus Referenzlaboratorien geschaffen werden. Im Kontext des europäischen Frühwarnsystems, übernimmt das ECDC die Rolle der Vermittlung eines schnellen und nahtlosen Informationsaustausches. Die Verantwortlichkeit für zu treffende Maßnahmen bleibt jedoch bei den Gesundheitsbehörden der Mitgliedsländer. Bei Ausbrüchen und Krisen innerhalb, aber auch außerhalb der EU, wird

das ECDC nach Anfrage ein EU-Team zur Unterstützung zusammenstellen und entsenden. Über die Koordination hinaus wird das ECDC die eingehenden Daten analysieren, interpretieren und die Ergebnisse den Entscheidungsträgern in den Mitgliedsländern, dem EU-Parlament, der EU-Kommission sowie anderen Organisationen zeitnah und in geeigneter Form zur Verfügung stellen. Seit September 2005 ist die Zeitschrift Eurosurveillance die offizielle Plattform für wissenschaftliche Informationen des ECDCs [vgl. Eurosurveillance 2005]. Die Bearbeitung von wissenschaftlichen Fragestellungen aus allen Bereichen der Infektionskrankheiten wird ein weiterer Themenschwerpunkt des ECDC sein. Dabei wird es auf Anfrage der Kommission, des EU-Parlaments oder aufgrund eigener Entscheidung tätig werden. Falls die Eigenexpertise des Zentrums zur Bearbeitung nicht ausreicht, können bei Bedarf sogenannte Ad-Hoc-Panels von Experten aus den Mitgliedsländern zu spezifischen Fragen einberufen werden, die das Zentrum beraten. Zur Erfüllung der hohen Ansprüche seitens der Politik und der Fachöffentlichkeit, wird zusätzlich mit Public Health Wissenschaftlern aus den Mitgliedsländern zusammengearbeitet [vgl. Wigzell 2005]. Einer der ersten inhaltlichen Aktivitäten wird sein, die oben genannten Netzwerke mit dem Ziel zu evaluieren, eine Vereinheitlichung in der Verfahrensweise zu erreichen [vgl. Commission Decision 2003].

9 Zukünftige Entwicklungen

Angesichts der zunehmenden Globalisierung und der damit verbundenen steigenden Mobilität von Menschen und Tieren sowie der länderweiten Distribution der Lebensmittel, bleibt die Notwendigkeit einer international koordinierten infektionsepidemiologischen Surveillance bestehen. Der Ausbruch von SARS im Jahr 2003 und die drohende Grippe-Pandemie (z. B. Vogelgrippe) haben das Bewusstsein, für die Gefahr einer schnellen Ausbreitung von Infektionskrankheiten in einer globalisierten Welt, geschärft. Eine gut funktionierende Zusammenarbeit in der europäischen Surveillance, in Form eines frühzeitigen Austausches von Daten und Informationen, bildet die Grundlage für alle krankheitsspezifischen Netzwerke. Ein entsprechender Datenaustausch kann nur funktionieren, wenn ein gemeinsames Verständnis von Methoden und Definitionen gegeben ist. Dann können epidemiologische Informationen, für eine auf Fakten gestützte europäische Gesundheitspolitik, eingesetzt werden. Moderne Methoden der Surveillance finden zunehmend Anwendung. Hervorzuheben ist die von der UNAIDS und WHO initiierte *Second Generation HIV Surveillance*. Bereits bestehende Surveillance-Methoden sollen verbessert, erweitert und untereinander kombiniert werden. Second Generation HIV Surveillance verknüpft Daten aus den Bereichen HIV/AIDS Surveillance, Surveillance von sexuell übertragbaren Krankheiten und Informationen zum Risiko- und Schutzverhalten. Die korrelierten Daten geben Hinweise über Risikopersonen, mit dem Ziel Trends zu erkennen und fokussierte Präventionsmaßnahmen gegen die Verbreitung von HIV durchzuführen [vgl. UNAIDS und WHO 2002]. Erste Erfahrungen bei der Untersuchung von Ausbreitungsmechanismen sind viel versprechend. Weitere Entwicklungen der modernen Surveillance werden in den kommenden Jahren folgen. Das methodische Wissen in der Surveillance, wird einen speziellen Wissenschaftszweig der Epidemiologie und Gesundheitswissenschaften ausmachen. Ein ganz entscheidender Faktor hierbei ist die internationale Komponente der Surveillance, Kontrolle und Prävention von Infektionskrankheiten. In Europa wird das ECDC zukünftig als wichtiger Knotenpunkt fungieren, in dem die Fäden der verschiedenen Forschungs- und Frühwarnnetzwerke zusammenlaufen. Es ist wahrscheinlich, dass sich europäische Netzwerke weiterhin verstärkt auf internationale Frühwarnsysteme übertragbarer Krankheiten konzentrieren. Dies fördert die Entwicklung einer schnell handelnden international angelegten Surveillance von Infektionskrankheiten. Die Kommunikation zwischen Beteiligten auf lokaler Ebene, Landes-, Bundesebene- und europäischer Ebene wird hier entscheidend sein. Surveillance, Kontrolle und Prävention von Infektionskrankheiten ist eine gemeinsame, internationale Aufgabe vieler beteiligter Experten im Gesundheitswesen.

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Anhang

Anhangsverzeichnis

Benchmarking National Surveillance Systems

A new tool for the integration of communicable disease control in Europe

Budapest, August 2005

by

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Content

List of Abbreviations

AIDS	Acquired Immune Deficiency Syndrome
aP	Acellular pertussis vaccine (normal dose)
ap	Low dose acellular pertussis vaccine (booster dose)
BCG	Bacillus Calmette-Guérin vaccine
CCDC	Consultant in Communicable Disease Control
CDC	Centers for Disease Control and Prevention
CDR	Communicable Disease Report Weekly
CDSC	Communicable Disease Surveillance Centre
CSEC	Central and south-eastern European countries
D	Diphtheria vaccine (normal dose)
d	Low dose diphtheria vaccine (booster dose)
DDASS	Directions Départementales des Affaires Sanitaires et Sociales en ile-de-France (Local Health Departments)
ECDC	European Centre for Disease Prevention and Control
ECOHOST	European Observatory on Health Care Systems
EPIET	European Programme for Intervention Epidemiology Training
EU	European Union
EUBSN	Basic Surveillance Network
GDP	Gross domestic product
GGD	Gemeentelijke Geneeskundige Dienst (Municipal Health Services)
HAW	Hamburg University of Applied Sciences
HepB	Hepatitis B vaccine
Hib	Haemophilus influenzae type b vaccine
HIV	Human Immunodeficiency Virus
HPA	Health Protection Agency
ICDS	Infection and Communicable Disease Service
IGZ	Inspectie Gezondheidszorg (Inspectorate for Healthcare)
InVS	Institut de Veille Sanitaire
IPV	Inactivated polio vaccine
IRIDE	Inventory of Resources for Infectious Diseases in Europe
ISIS	Infectious Disease Surveillance Information System
KTL	Kansanterveyslaitos (National Public Health Institute)
LOEGD	Public health institute in North Rhine-Westphalia

MenC	Meningococcal meningitis serotype C vaccine
MMR	Measles, Mumps and Rubella
NCE	National Center for Epidemiology
NIDR	National Infectious Disease Register
NPHMOS	National Public Health and Medical Officers' Service
nv-CJD	new variant Creutzfeldt-Jakob-Disease
OEK	(Johan Béla) Országos Epidemiológiai Központ (National Center for Epidemiology)
OPV	Live oral polio vaccine
PHARE	Poland and Hungary Aid for the Reconstruction of the Economy (later including all central and eastern European countries)
RIVM	Rijksinstituut voor Volksgezonheid en Milieu (National Institute for Public Health and the Environment)
RKI	Robert Koch Institute
SARS	Severe Acute Respiratory Syndrome
T	Tetanus vaccine (normal dose)
t	Low dose tetanus vaccine (booster dose)
Var	Varicella vaccine
WHO	Word Health Organization
wP	Whole cell pertussis vaccine

List of Figures and Tables

Abstract

Introduction: Infectious diseases do not respect national boundaries and it is an important challenge to health internationally [Hawker et al. (2005)]. Despite this common public health problem across European Union (EU) considerable variations exist in the structure and performance of EU surveillance systems for communicable disease prevention and control [Desenclos et al. (1993)]. EU countries should share ideas to raise the quality of surveillance systems [Fenton et al. (2004)]. Therefore a benchmarking study of national surveillance systems was carried out to identify strengths and weaknesses of the Hungarian surveillance system. The study aimed to implement the instrument benchmarking in national surveillance systems, as well as to support the integration of Hungarians surveillance system in the EU.

Methods: Benchmarking processes were performed with selected criteria (e.g. case definitions, early warning applications, outbreak investigations and vaccination programmes). These criteria were compared and evaluated. Surveillance systems from six European countries (Hungary, Germany, England & Wales, Finland, France, The Netherlands) were described and analysed. After a comprehensive data collection and validation by several European public health experts a descriptive data analysis took place. Identification and description of best practices were carried out.

Results: The results of the present study confirm that benchmarking national surveillance systems as a new tool for the integration of communicable disease control in Europe is applicable. It becomes obvious that Hungary has in general a well functioning communicable disease control and prevention system. Nevertheless other countries perform better in some areas, e.g. data analysis and early warning applications. Therefore different practical examples from surveillance systems selected in the study were demonstrated. Finally recommendations were given to the Hungarians stakeholders.

Discussion: A gold standard of surveillance systems in various European countries is very difficult to achieve, because of heterogeneity in e.g. disease burden, personal and financial resources. However, to improve the quality of surveillance systems across Europe it would be useful to benchmark the surveillance systems of all EU member states. Such an initiative should be supported by relevant European institutions (e.g. ECDC).

Keywords: Benchmarking, Infectious disease surveillance systems, European Union

1 Introduction

"Good surveillance does not necessarily ensure
the making of the right decisions,
but it reduces the chances of wrong ones"
Langmuir 1963

Infectious diseases do not respect national boundaries. Thus outbreaks have the potential to involve more than one country [Hawker et al. (2001)]. Based on this facts diseases like SARS , nv-CJD , HIV/AIDS as well as re-emerging diseases like e.g. Tuberculosis or Diphtheria are important challenges to health internationally. It is obvious that the efficiency and effectiveness of national surveillance systems for communicable diseases and their control is the basic requirement to ensure safety at national and European level. The ongoing erasure of borders within the European Union (EU) will necessitate a more coordinated approach to the surveillance of infectious diseases. Free movement of goods and people creates a need for national surveillance institutes to communicate events to each other regularly, sometimes rapidly, and to use similar surveillance systems and case definitions [Giesecke (1996)]. Therefore a number of international surveillance networks have been developed between the countries of the EU over recent years [Sprenger et al. (1998)]. In addition the European Centre for Disease Prevention and Control (ECDC) is build up to improve national and common European surveillance systems. However, the way that surveillance of a given disease is undertaken in European countries, still varies greatly [Desenclos et al. (1993), Fenton et al. (2004)].

In May 2004 Hungary became a new member of the EU. Currently Hungary prepares his existing national surveillance system to cope with the new situation after accession. The twinning light project between Hungary and Germany aims to help strengthen Hungarians defences against infectious diseases. The activity 4 in this twinning light project examines whether benchmarking of national surveillance systems as a new tool for the integration of communicable disease control in Europe is applicable. Thus the benchmarking study compares national surveillance systems in six EU member states (Hungary, Germany, England & Wales, Finland, France and The Netherlands), in order to identify strengths and weaknesses of the Hungarian surveillance system. The objective is to give recommendations to Hungarian stakeholders to enforce the quality of Hungarians national surveillance system for communicable disease control.

2 Methods

An operational definition describes benchmarking as a systematic process, which products, services and methods are judged and compared with those of these competitors, which are local, regional or even world-wide leading [Camp (1989)]. Points of reference are created by such a procedure, in order to set performance-goals and to align activities of the own organization to the world-wide best practices [Töpfer (1997)].

The method benchmarking was developed in the beginning of the eighties last century in the industry and led there partly to quantum transitions in the development of quality [Zairi (1994)]. Since that time benchmarking - the comparing with the best ones – hold a true triumphant introduction into broad ranges of production and service industries in the private and in the public sector [Wegener (2004)] as well as in the public administration [Keller (2004)]. Benchmarking plays furthermore an important role in research projects [Tintelnot (1997)] also in the European Union [O'Mahony (2003), European Commission (2002)].

Therefore benchmarking was also considered in the conception of PHARE as well as during the period of planning and execution of the Twinning Projects. Despite the numerous positive experiences with the method, it must also be critically referred to the often inflationary use of the term and/or the reduction to a pure characteristic comparison of figures. Although a professional execution of benchmarking has significant methodical demands [van Suntum (2004)], in the Twinning-Light-Project “Benchmarking National Surveillance Systems” a comprehensive multi-level proceeding according to Ransley was selected [Ransley (1994)]. The seven key elements are:

Step1	Selection of the process or function to benchmark
Step 2	Understand the existing process or function
Step 3	Identify benchmarking partners
Step 4	Collect data and information
Step 5	Identify gaps and reasons for them
Step 6	Develop programmes to implement findings
Step 7	Implement changes and monitor results

Figure 2.1: Key elements of Benchmarking [Ransley (1994)]

A benchmarking process is not stepwise and statically. It is a learning process of one into one another seizing automatic control loops, which allow at any time to react to changing conditions and to intervene modifying [American Productivity and quality center, (1993)]. Simplifying one can divide the expiration of a benchmarking cycle mostly into three periods: planning, analysis and execution. In the following part of this chapter the work procedures to the particular steps of the cycle, accomplished concretely in the project, are presented in detail.

Step 1: Selection of the process or function to benchmark

With the selection of a benchmarking topic it is recommended to select only those activities which promise - in relation to the efforts - the best results. Helpful is a self assessment, which is based on the experience, that the concerned ones (persons, organizations) know strengths and weaknesses very exactly due to their daily practice. A more complex criterion for choice is the execution of a SWOT (Strength, Weakness, Opportunities and Threads) analysis, which allows a weakness analysis as well as the development of an action plan.

Basis for the first selection of benchmarks were components of public health surveillance systems described by the Communicable Disease Control Handbook [Hawker et al. (2001), (2005)], as well as by the Guidelines for Evaluating Public Health Surveillance Systems [CDC (2001)]. After detailed discussion between the project partners the following ten components were identified as benchmarks in a consensus decision making process:

- Notifiable diseases
- Case definitions
- Timeliness following disease onset
- Formats of reporting,
- Data use
- Early warning applications
- Outbreak investigations
- Data dissemination
- Vaccination programmes
- Evaluation

Step 2: Understanding of the existing process or function

A benchmarking team must agree in the estimation of the expiration of the goal process to create common starting point, which makes it possible to concentrate on key elements and successes. The team must likewise learn lo “live” benchmarking and to plan the execution of the project.

The numerous round-table discussions in the introduction period of the project were therefore used to develop an uniform "language" between the project partners and to analyse and agree about the most important benchmarking processes and functions.

Step 3: Identification of benchmark partners

It is quite clear that for the aimed alignment of the different reporting systems between the old and possibly still more between the new member states of the EU, it is not sufficient to select only the two twinning partners Hungary and Germany. To use the true power for the identification of best practices, a greater number of benchmarking partners has to be selected. The selection process takes place in three steps: The skimming, a first rough selection, the trimming, an exact analysis and finally the creaming, the taking of the best. The relevance and the expenditure of the inclusion of the individual partners must always be considered.

Beside the twinning partners Hungary and Germany four further benchmarking partners (England & Wales, Finland, France and The Netherlands) were selected. The reasons of chose these countries were because of previous knowledge of good/best practices in different areas of communicable disease and control. Thus these countries were selected because of previous work experiences in some of this surveillance systems and personal contacts with experts at national public health institutes.

Step 4: Collection of data and information

This step contains the decision over the specific methods of the data content and the data gathering. A selection and/or combination of questionnaires, telephone interviews or personal discussions and/or inspections is possible. Characteristic numbers serve within the benchmarking as a basis for analyses, planning procedures, goal-hitting and control sizes. Characteristic numbers are consolidated information. Success or failure of the benchmarking essentially depends on the acceptance of the procedure and the database. It is very important to constitute the correct figures [Bichler (1993)].

To get a short assessment of national surveillance systems in Europe and additional ideas for the benchmarking exercise, a questionnaire regarding the necessity of benchmarking of national surveillance systems, possible indicators, evaluations of surveillance systems, strengths and weaknesses of components of surveillance systems and available data sources for benchmarking (annex 1), was designed and was sent to various experts in surveillance at national level throughout the six countries. In addition the questionnaire was used as an interview guideline during the field visits, which took place at local, regional and national institutes, in Hungary.

The authors reviewed published and unpublished literature. Several field visits were done in Hungary, in order to get a detailed knowledge about the surveillance system in Hungary. The investigators presented and discussed the benchmarking study at the annual meeting of Hungarian Epidemiologist and Sanitary Inspectors on communicable diseases in Balatonboglar. The complete data collection method consisted of numerous quantitative and qualitative data. Interviewees were selected, in order to validate the data from Public Health experts in surveillance systems throughout the six countries.

Step 5: Identification of gaps and reasons for them

In this phase a careful planning process disburses itself. The selected measurements quantify differences in execution and the purposeful questions identify the reasons of the differences. All data must be examined for agreement and a suitable data preparation has to ensure the comparability. As far as possible cause efficiency ratios between measurements should be accomplished and reasons for gaps should be identified. Gathering of trend data is also important, since one data always represents only a single “snapshot”.

In order to analyse the data the key features for each component were brought into a format which allows a descriptive assessment of the contents and use of data. A descriptive comparison took place.

Step 6: Development of programs to implement findings

The proceedings, which take place during the conversion and/or the implementation of findings and recommendations, are not easily to generalize, because they depend much on the organization culture. One should discuss about what could be learned from others over their experiences during the introduction and their agreements over key results and recommendations. Before they can be spread an informal result overview should be offered to all participants and it should be enough time for feedback from them. For every change which can be recommended the responsible receiver must be identified and all conceivable hurdles must be considered to facilitate the conversion of the recommendations. Determining costs and realistic expected advantages of the recommendations are likewise important. In any case an agreement must be found, in which the way of delivery and all addresses of the results and recommendations are mediated. Into the final report once more feedback mechanisms should be included. Personal discussions are to be offered to all groups which are concerned by changes to secure, that all influences are considered also by peripheral groups in the conversion plan.

The authors looked for “best practice” in the six countries under investigation, in order to give Hungarians stakeholders a short description of good performances in different areas of communicable disease surveillance.

Step 7: Implementation of changes and monitoring of results

Only during the conversion the success disburses itself. Benchmarking causes quite revolutionary "quantum transitions" (breakthroughs) during consistent conversion of the results. Sometimes this involves a total restructuring (reengineering) to the organisation/institution. The change potential of the individual ranges is thereby always in the delta between the own performance and the best practices.

A first draft of recommendations for action was discussed in detail with Hungarian experts. Revised recommendations were given to the Hungarian stakeholders and regionally responsible persons per presentation during the second workshop on the 27th of June 2005 in Budapest. Therefore the final report contains recommendations with high practicability.

3 Benchmarking partner countries

This chapter gives general background information about the six countries involved in the study. A short overview of organisational structures of each surveillance system is given. An organizational structure is required, if the surveillance loop of data collection, analysis, interpretation, and feedback is to function as a continuous process [Berkelman et al. (2002)]. Aspects like legal framework, levels of reporting and levels of responsibilities, will be described in order to introduce each benchmarking partner country. Furthermore a flow chart shows the process of notification by each system to demonstrate the complex forms of reporting.

Hungary

Hungary is located in the Carpathian basin in Central Europe. It has a population of 10,083,000 inhabitants (estimated in 2005). It covers an area of about 93,000 km², giving an average density of 108 inhabitants per km² [Internet World Stats (2005)]. Life expectancy still remains among the lowest in Europe. In 2002, Hungarian men had a life expectancy of 68.4 years and women of 76.6 years. In 2001, Hungary spent 6.8% of its gross domestic product (GDP) for health.

Looking at the causes of death, infectious diseases seems to be less of a problem, as incidence and mortality from most childhood infectious diseases, viral hepatitis, tuberculosis and AIDS continue to occur not so frequently in Hungary than in the average of central and south-eastern European countries (CSEC) [Gaál (2004)]. In Hungary, the surveillance of infectious diseases has played a significant role in the control and the low burden of infectious disease [Csohán (2004)].

Organizational structure of the statutory notification system in Hungary

Legal framework: Hungary has a long history of civic regulation for control of infectious disease, and has had an overall national legislative framework since the 1870's. An obligatory system for reporting selected communicable disease has been in operation since 1931. The reporting system of communicable disease is regulated by Decree No 63/1997 (XII.21) of the Minister of Welfare (based on the authorisation by Act 47 of 1997) [Hawker et al. (2005)].

Levels of responsibilities and reporting: Physicians, who detect a case or cluster of probable or suspected infectious disease, must send a report to the local level of the National Public Health and Medical Officers' Service (NPHMOS) [Csohán (2004)]. Generally the clinical di-

agnosis or syndrome, often without known ethiology, is reported to the Public Health authorities and a specimen is send to a diagnostic laboratory. The report is sent by mail on paper forms. At local level the data entry of reported data takes places in a central database of the NPHMOS. Access to the server should be possible at any time. Subject to access authorisation should be possible at each level (local, county and national) [Csohán (2004)]. The National Center for Epidemiology provides the scientific background (including scientific research and training) for the surveillance of communicable diseases. Regarding Public Health action the case management is done by notifying doctors, hospitals and health care providers. Control measures, including contact tracing and outbreak investigations, are generally the responsibility of municipal and regional institutes, with support of the National Center for Epidemiology. The NPHMOS relies on an institutional network, covering the entire country. 119 municipal institutes are the principal enforcement authorities [Hawker et al. (2005)]. Figure 3.1 demonstrates the flow chart of statutory notification system in Hungary.

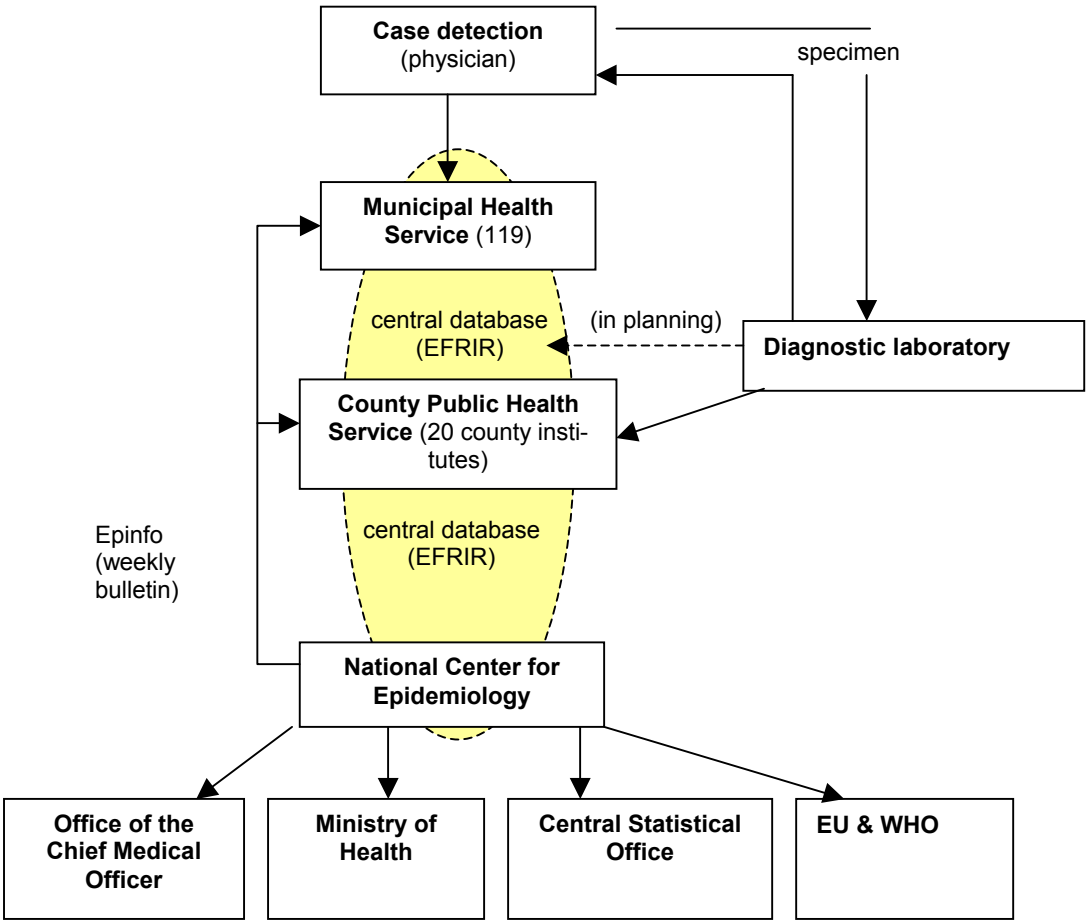


Figure 3.1: Flow chart of statutory notification system (Hungary) [modified on the basis of Hawker et al. (2005)]

Germany

Germany is situated in central Europe. It has a population of 82,726,000 inhabitants (estimated in 2005). It covers an area of about 357,000 km², giving an average density of 221 inhabitants per km² [Internet World Stats (2005)]. By 2001/2003, life expectancy was to 75.6 years for men and 81.6 years for women. In 2002, Germany spent 11.1% of its GDP on health [Busse (2004)].

Organizational structure of the statutory notification system in Germany

Legal framework: The Ministry of Health is responsible for introducing changes in the statutory notification system and a new legislation was enforced in 2001 [Hawker et al. (2005)].

Levels of responsibilities and reporting: The local responsibility for reporting is held by physicians and medical microbiological laboratories are obliged to report notifiable diseases. The local responsible for action are the local health departments in cooperation with physicians and hospitals. The National Surveillance is coordinated by the *Robert Koch Institut* (RKI) in co-operation with the 16 states, as in the federal system of Germany the responsibility for health is held at state level. Regarding Public Health Action the responsibility for case management is held by the notifier. Control measures including contact tracing and outbreak investigation are generally the responsibility of the Public Health Service, primarily on local level with support from state and national level [Hawker et al. (2005)]. The country is divided into 439 districts, each with a local health department. The average population size is 186,000 (20,000-3,500,000). These districts belong to regions which form 16 states with an average population size of 5,100,000 inhabitants (700,000 - 18,000,000) [Hawker et al. (2005)]. Figure 3.2 demonstrates the flow chart of statutory notification system in Germany.

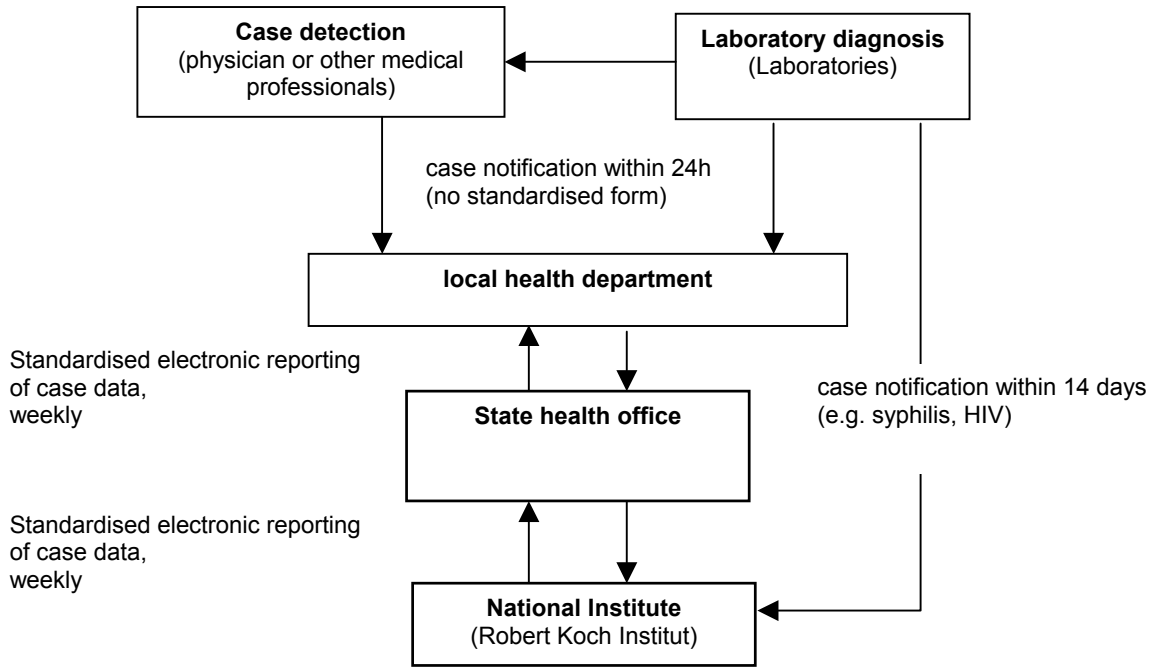


Figure 3.2: Flow chart of statutory notification system (Germany) [modified on the basis of Hawker et al. (2005)]

England and Wales are two of four constituent countries of the United Kingdom of Great Britain and Northern Ireland. England has a population of 49,855,000 inhabitants and Wales has a population of 2,938,000 inhabitants (estimated in 2003). England and Wales covers an area of about 151,168 km², giving an average density of 349 inhabitants per km² [Statistics Gov. UK (2005)]. The life expectancy for men is 76.0 years and for women 81.0 years. The total expenditure on health care in UK was estimated at 7.7% of its GDP in 2002 [WHO (2005)].

Organizational structure of the statutory notification system in England and Wales

Legal framework: The relevant department of health is responsible for introducing changes in the statutory notification system [Hawker et al. (2005)].

Levels of responsibilities and reporting: The notifying physician has the responsibility for case management. Control measures, including contact tracing and outbreak investigation, are generally in the responsibility of the Consultant in Communicable Disease Control (CCDC) of the local Health Protection Agency (HPA) unit. Regional and national support is available from the HPA in England and infection control doctors in Wales. Health Protection Agency. The HPA's - Communicable Disease Surveillance Centre - is responsible for surveillance at national level. In Wales the Infection and Communicable Disease Service (ICDS), which in-

cludes the Communicable Disease Surveillance Centre and a network of microbiology laboratories is part of the National Public Health Service of Wales. Regarding Public Health action the local responsible for action is held by primary care trusts, district and unitary local government authorities, as well as local units of the Health Protection Agency [Hawker 2005]. The local responsibility for reporting is held by general practitioners and hospital physicians, who report to the Proper Officer (statutory) which in turn is reported to Health Protection Agency. Laboratory reporting (non-statutory but encouraged) goes to the local health protection units and the HPA regional surveillance units via an electronic reporting system (CoSurv), which then goes to the national centre [Hawker et al. (2005)]. Figure 3.3 demonstrates the flow chart of statutory notification system in England and Wales.

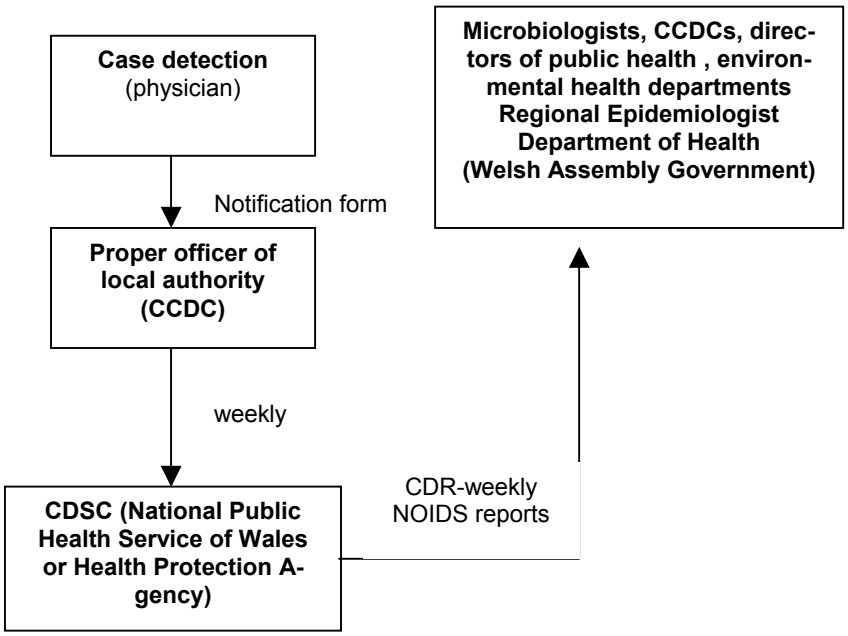


Figure 3.3: Flow chart of statutory notification system (England and Wales) [Hawker et al. (2005)]

Finland

The Republic of Finland is located north-east of the Baltic Sea. It has a population of 5,246,000 inhabitants (estimated in 2005). It covers an area of about 337,030 km², giving an average density of 15 inhabitants per km² [Internet World Stats (2005)]. Although the average age of the Finnish population is slightly below the EU average. Current projections suggest, that the number of people aged 65 years or more, will grow over 50% in the next 20 years [Järvelin (2002)]. The life expectancy in 2000 was 74 years for men and 81 years for women. Total Health expenditure as a percentage of GDP has been constantly decreasing, reaching 6.8% in 1999 [Järvelin (2002)].

Organizational structure of the statutory notification system in Finland

Legal framework: The law and act of communicable diseases (1986, last amendment 2003) regulates surveillance and control of infectious diseases. The Ministry of Health is responsible for introducing changes in the statutory notification system [Hawker et al. (2005)].

Levels of responsibility and reporting: The local responsiblility for reporting and action is held by physicians. They are responsible for detection and notification of cases and for necessary action to stop spread. They are assisted by infectious disease specialists and microbiologists. Laboratories report directly to the National Infectious Disease Register (NIDR). In addition, laboratories send microbes to a national strain collection. Municipal health authorities are in primary charge of control measures. The national Public Health institute *Kansanterveyslaitos* (KTL) is responsible for the National Surveillance. Regarding Public Health action responsibility for case management is held by the notifier. Control measures including contact tracing and outbreak investigation are generally the responsibility of the Public Health Service at local level , is supported by the national level [Hawker et al. (2005)]. Finland is divided into 452 Local Health Units (average population size of 11,000) and 21 Regions (average population size of 240,000). For some diseases both, the physician and the laboratory must report the case, for others only laboratory reports are collected. During routine reporting, laboratories remind clinics about the duty of treating physicians to notify any notifiable infectious diseases. The information is entered into the National Infectious Disease Register and duplicate notifications are merged. Data from individual cases are linked by a unique personal identifying number [Hawker et al. (2005)]. Figure 3.4 demonstrates the flow chart of statutory notification system in Finland.

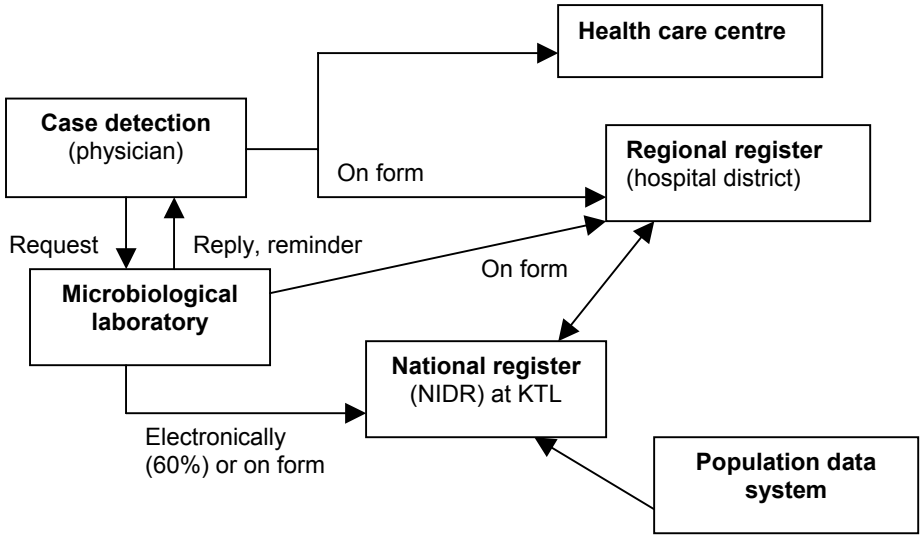


Figure 3.4: Flow chart of statutory notification system (Finland) [Hawker et al. (2001)]

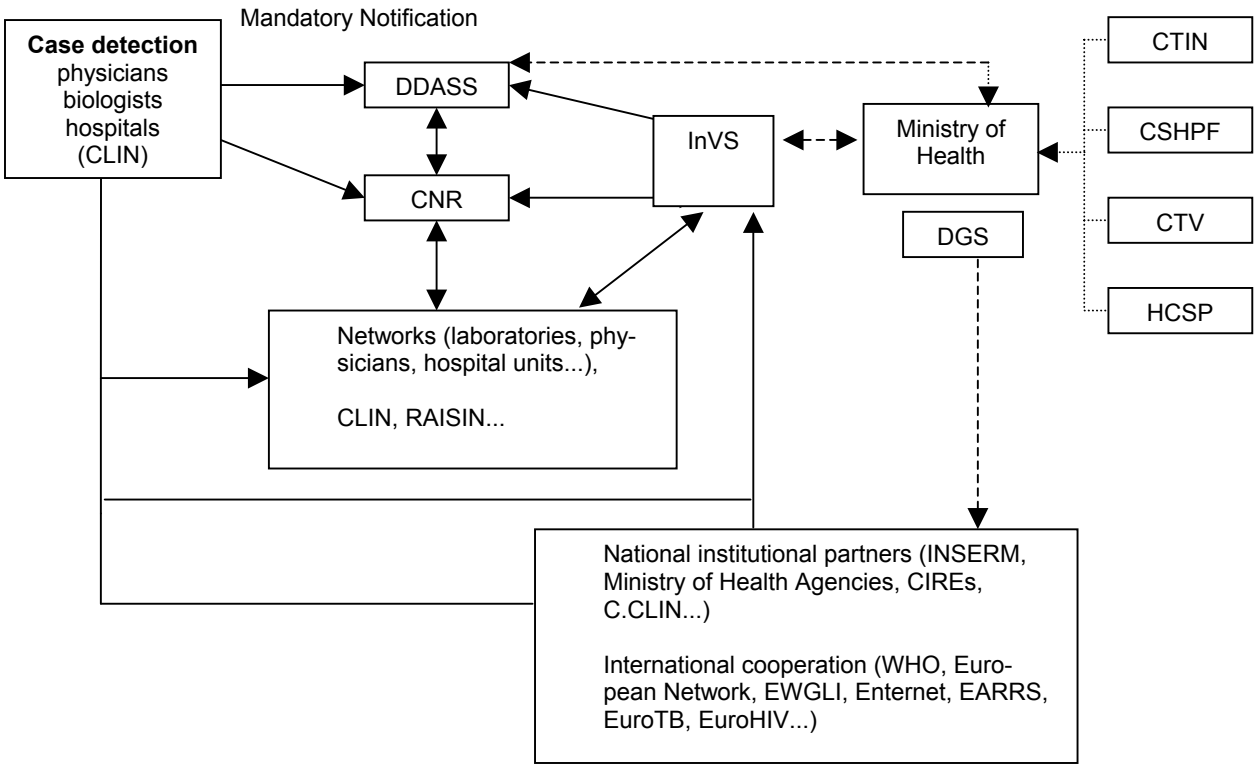
France

France has a population of 60,293,000 inhabitants (estimated in 2005). It covers an area of about 545,000 km², giving an average density of 107 people per km² [Internet World Stats (2005)]. French women have the longest average life expectancy in Europe at 82.7 years, while men are expected to live 75.2 years (2000). Total expenditure on health care in France was estimated at 9.5% of its GDP in 2001 [Sandier (2004)].

Organizational structure of the statutory notification system in France

Legal framework: The Ministry of Health is responsible for introducing changes in the mandatory notification system [Hawker et al. (2005)].

Levels of responsibilities and reporting: The local responsibility for notification is held by all physicians, biologists and hospitals. They are obliged by law to notify all cases that fulfil the criteria for mandatory notifiable diseases. The local Health Departments (DDASS) are responsible for Public Health action. The Ministry of Health is responsible for introducing modifications in the notification system. The *Institut de Veille Sanitaire* (InVS) and the *Direction Générale de la Santé* are involved in managing surveillance at national level. The responsibility for case management is held by the notifier. Control measures, including outbreak investigation, are generally the responsibility of the Public Health services, primarily on local level with support form regional and national level. The InVS performs trend analysis and outbreak detection based on the surveillance data [Hawker et al. (2005)]. France is divided in 100 local Health Departments - with an average population size of 570,000 (75,000 - 2,500,000). Individual cases are anonymously notified to the DDASS, with the use of standardised forms. According to the disease, a case detection may lead to two levels of action. All the diseases - except HIV/AIDS, acute hepatitis B and tetanus - have to be reported in emergency and then notified for immediate action [Hawker et al. (2005)]. Figure 3.5 demonstrates the flow chart of the statutory notification system in France.



CIRE: Inter-Regional Epidemiology Unit; **CLIN**: Nosocomial Infections Control Committee; **C-CLIN**: Coordination Center for Nosocomial Infections Control; **CNR**: National Reference Center; **CSHPF**: French Council for Public Health; **CTIN**: Technical Committee for Nosocomial Infections; **CTV**: Technical Committee Vaccinations; **DDASS**: Local Health Departments; **DGS:** Directorate of Health; **EARRS**: European Antimicrobial Resistance Surveillance System; **EnterNet**: International Surveillance Network for Enteric infections due to Salmonella et VTEC O157; **EuroTB**: European Surveillance Programme for Tuberculosis; **EuroHIV**: European Surveillance Programme for HIV/AIDS; **EWGLI**: European working group on Legionella infection; **HCSP**: High Committee of Public Health; **InVS**: Institut de veille sanitaire; **RAISIN**: Alert, Investigation and Surveillance Network for Nosocomial Infections

Figure 3.5: Flow chart of statutory notification system (France) [Hawker et al. (2005)]

The Netherlands

The Netherlands are located in Western Europe and borders the North Sea, between Belgium and Germany. They have a population of 16,316,000 inhabitants (estimated in 2005). It covers an area of about 41,526 km², giving an average density of 392 inhabitants per km² [Internet World Stats (2005)]. The life expectancy for men is 76.0 years and for women 80.7 years. Total expenditure on health care was estimated at 9.1% of its GDP in 2002 [Exter (2005)].

Organizational structure of the statutory notification system in The Netherlands

Legal framework: The Ministry of Health is responsible for introducing changes in the statutory notification systems; a new legislation was implemented in 1999 [Hawker et al. (2005)].

Levels of responsibilities and reporting: The physicians and medical microbiological laboratories are required, by law, to notify the *Gemeentelijke Geneeskundige Dienst* (GGD, municipal health services) of patients diagnosed with notifiable infectious diseases. The GGD are the regional authorities responsible for receiving preliminary notifications so that immediate control measures can be initiated. The GGD are required, by law, to send summaries of these reports as soon as possible to the Chief Medical Officer at the Inspectorate for Healthcare (IGZ). Regarding Public Health the responsibility for case management is held by the notifier. Control measures including contact tracing and outbreak investigation are generally the responsibility of the Public Health Service, primarily on local level with support from national level. The GGD is responsible for an average population size of 369.070 (160.943 - 1.00.3.452) [Hawker et al. (2005)]. Figure 3.6 demonstrates the flow chart of the statutory notification system in The Netherlands.

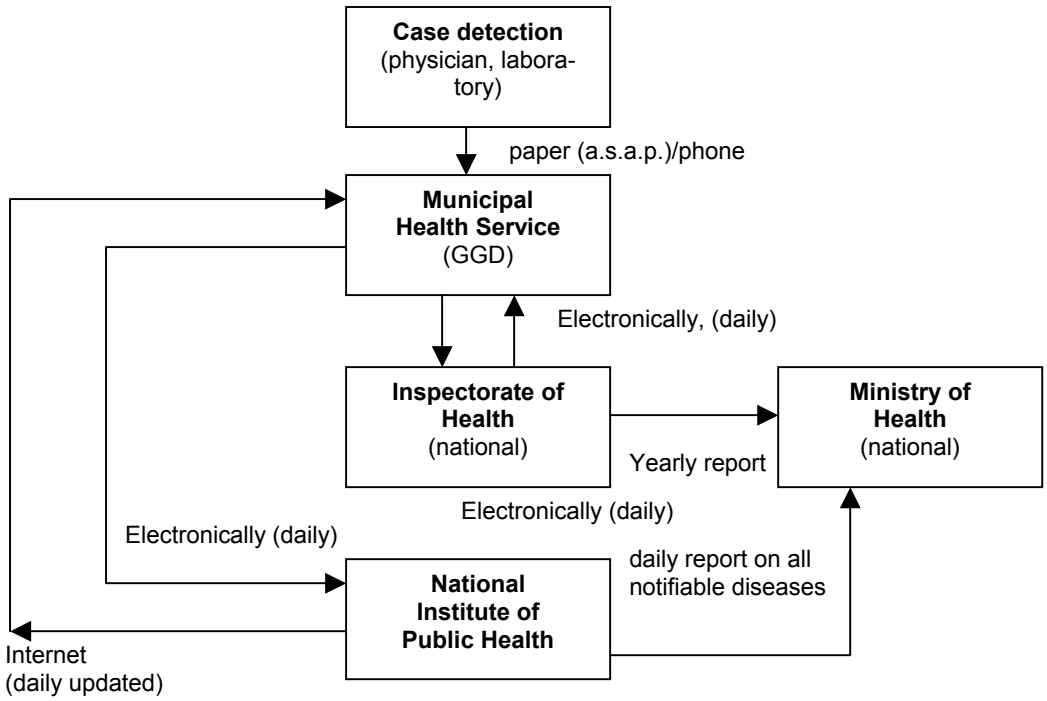


Figure 3.6: Flow chart of statutory notification system (The Netherlands) [Hawker et al. (2005)]

4 Results

The benchmarking identified remarkable differences between the components under consideration in the six national surveillance systems. The following components demonstrate the varieties between the six national surveillance systems and identify areas for improvement. The findings are presented in tables using green colour for best practices and yellow colour for areas for potential improvement.

4.1 Notifiable diseases

Notifiable diseases are defined as diseases that, by statutory/legal requirements, have to be reported to public health or other authorities, in the pertinent jurisdiction, when the diagnosis is made [Last (2000)]. Many countries engage in the surveillance a large number of diseases [IRIDE (2005)]. In each country, the extent of notifiable diseases depends, among other factors, on the historical background and the various disease burdens in the individual country. Notification of a certain disease is important to one country and might be less important to another [Buehler (1998)]. In some countries the notifier is reimbursed for notifying cases. The list of notifiable diseases in the selected countries were compared. In addition, the criteria were whether financial incentive for notifiers exists are described (see table 4.1).

Table 4.1: Number of notifiable diseases and financial incentives for notifier in six European countries, June 2005

country	number of notifiable diseases / agents reported by law [1]	financial incentive is given to physicians for notification [1]
Hungary[1]	**69** diseases (with personal data) **13** diseases (without personal data)	no
Germany[2,1]	**47** agents (laboratory with personal data) **22** diseases/disease groups (with personal data) **6** agents (laboratory without personal data)	no
England & Wales[1]	**30** diseases	~ € 4.-
Finland[3]	**70** diseases	no
France[1]	**26** diseases	no
The Netherlands[1]	**35** diseases	no

[1]Hawker et al. 2005, [2]RKI 2005a, [3]Ruutu & Takkinen, personal interview (KTL) 2005

The number of notifiable diseases between the six countries ranges from 26 (France) to 82 (Hungary). In Hungary 69 diseases are mandatory notifiable with personal identifying data and 13 diseases without identifying data. The Hungarian list of diseases under surveillance includes nearly all the diseases recommended by the EU for progressive inclusion in national surveillance systems (Decision No 2000/96/EC, 2003/534/EC) [Csohán (2004)]. Financial incentives are only given in England and Wales to physicians for the notification per case [Hawker et al. (2005)].

4.2 Case definitions

Defining a case is a fundamental step in the development of a surveillance system. The case definition of a disease includes clinical manifestations, laboratory results, epidemiological information as well as levels of certainty (e.g. confirmed, probable or possible) [Buehler (1998)]. It is both, a criterion for determining who is counted and a guide to local health departments for case investigations and follow-up. It ensures that the same measure is used across geographical areas. The case definition must be sufficiently inclusive (sensitive) to identify people who require public health attention but sufficiently exclusive (specific) to avoid unnecessary diversion of that attention [Berkelman et al. (2002)]. Definitions should be concise and explicit. And they should be used consequently [Kraemer & Reintjes (2003)]. In addition, case definition must be usable for everyone on whom the system depends for case reporting. Thus, using case definitions enhances the comparability of notification data between individual member states. The need for a common definition of diseases were strongly felt within the EU. In March 2002 the commission adopted a decision laying down case definitions for reporting communicable diseases to the community network (Decision No 2002/253/EC) [EUBNS (2005)].

The criteria compared in the study are whether case definitions for notifiable diseases were generally in use and whether these case definitions related to the three-tiered system (confirmed, probable, possible) referring to the “EU-case definitions” (see table 4.2).

Table 4.2: Case definitions for notifiable diseases in six European countries, June 2005

country	case definitions are in use	classification with a three-tiered system (confirmed, probable, possible), according to EU recommendations[8]
Hungary[1,2]	yes	in progress
Germany[1,3]	yes	yes
England & Wales[1,4]	mainly for food poisoning, not for all diseases	no
Finland[1,5]	yes	no, all cases lab confirmed
France[1,6]	yes	yes
The Netherlands[1,7]	yes	yes

Fields marked in green identify good/best practice. Fields marked in yellow identify areas for potential improvement.

[1]Hawker et al. 2005, [2]Csohán, personal interview (NCE) 2005, [3]RKI 2005, [4]Harding, personal interview (HPA, London) 2005, [5]Takkinen, personal interview (KTL) 2005, [6]InVS 2005a, [7]RIVM 2005a, [8]Commission Decision No 2002/253/EC

In five countries the compared case definitions for all notifiable diseases are in use. Germany, France and the Netherlands have a three-tiered classification within their case definitions similar to the recommended EU case definitions (Commission Decision No 2002/253/EC). In Finland all cases are laboratory-confirmed, except a part of tuberculosis cases [Ruutu, personal interview (2005)]. In Hungary a national surveillance manual provides clinical definitions, laboratory criteria for diagnosis and case definitions. Currently the implementation of EU case definitions are in progress [Hawker et al. (2005)]. In England and Wales a clear classification is not in use for a formal notification. It is only used for some enhanced surveillance projects and for laboratory surveillance. For example measles, mumps and rubella notifiers is sent a salivary test kit with a request for a sample to confirm diagnosis [Hawker and Weinberg, personal interview (2005)].

4.3 Timeliness and formats of reporting

In reportable communicable disease surveillance systems, health care providers and diagnostic laboratories usually report information regarding persons with notifiable conditions to the local public health system. Reporting proceeds in a hierarchical fashion to the state and to the national level [Jajosky et al. (2004)]. Timeliness of reporting reflects the speed between these steps in a surveillance system. The need for a rapid response in a surveillance system depends on the nature of the health-related event under surveillance and the objectives of that system [CDC (2001)]. For example some diseases are of such urgency that re-

porting to the local health department is required within 24 hours; others with less urgency can be reported less rapidly [Buehler (1998)]. The increasing use of electronic data interchange by surveillance systems might promote timeliness [CDC (2001)].

The criteria compared in this study are health event reported to local, regional and national public health system. Estimated times to inform local, regional and national levels are given as average values (in accordance to national laws). Likewise the reporting sources were identified for each country (see table 4.3).

Table 4.3: Timeliness and formats of reporting for notifiable diseases in six European countries, June 2005 [1]

country	local level	via	regional level	via	national level	via
Hungary[1]	~24 hours - ~ 3 days	paper◊, phone	2 - 3 days	electronic	2 - 3 days	electronic
Germany[2]	~24 hours - ~ 3 days	paper, phone	up to the third working day of the first week after reporting	electronic	up to the third working day of the second week after reporting	electronic
England & Wales[3]	~24 hours - ~ 2 days	paper, phone	7 days	electronic	up to 7 days	electronic
Finland[4]	~24 hours - ~ 2 weeks	paper and/or electronic	1-day – 2 weeks	electronically by remote access to their area's data in the national register	1 day – 2 weeks (median 7 days for laboratory notifications	electronically directly from laboratory and on paper from physicians
France[3]	~24 hours - ~5 days	paper, phone	could not be identified	could not be identified	1 - 5 days	electronic
The Netherlands[3]	~24 hours - ~3 days	paper, phone, email	n.a.	n.a.	in general less than a week	electronic

[1]Csohán, personal interview (NCE) 2005, [2]van Treeck, personal interview (lögd NRW) 2005, [3]Hawker et al. 2005, [4]Ruutu & Takkinen, personal interview (KTL) 2005
n.a. = not applicable as there is no regional level for reporting in the Netherlands

According to this findings, Hungary has the best timeliness of reporting following disease onset (2 - 3 days to national level). In contrast in Germany the notifications reach up to the third working day of the first week after reporting at the regional and national public health system. In Finland laboratory notifications are sent directly to the national level with an average of 5 working days from sampling date. Physician notifications are sent through the regional level to the national level in approximately two weeks. In England and Wales the statutory notifications reach national level within 7 days, laboratory reports reach local level within 1-2 days and regional level within 7 days. In France the estimated time to inform national level is between 1 to 5 days, for local and national level and according to the disease [Hawker et al. (2005)].

In all six countries paper notification forms and/or phonecalls are used by the notifier to report to the local public health system. In the Finish surveillance system cases are reported electronically by remote access into the (central) national register, in a non-hierarchical procedure [Ruutu, personal interview 2005]. Hungary, Germany, England and Wales and the Netherlands have electronic case reporting systems from local Public Health level upwards. For example in Hungary the electronic software EFRIR is used to report cases from local to regional and national level. As soon as the data is entered in the Public Health intranet it is accessible at all level [Csohán, personal interview (2005)].

4.4 Data use and early warning applications

The fundamental objective of a national surveillance system for communicable diseases is to use reported data for generating “information for action”. Data should be used to produce descriptions of effected population groups by time, place and person. The information should transferred to those who need it for the translation into prevention and control measures [Reintjes et al. (2001)].

The early discovery of changes in trends of diseases and risk factors is essential to allow a quick investigation and the use of suitable control measures. Automated early warning applications can answer questions on the present situation of infectious diseases, on the presence or absence of outbreaks and/or epidemics and on the effect of control and prevention measures [Reintjes et al. (2001)].

The criteria compared in this study are information about the use of surveillance data sets. This item is classified in three benchmarks: time series analysis, regional distribution, and

description of effected population groups. In addition it was compared of whether automatic early warning applications are in use (see table 4.4).

Table 4.4: Data use and early warning applications for notifiable diseases in six European countries, June 2005

country	information regularly generated from data set			automatic early warning system application
	time series analysis	regional distribution (incl. mapping)	description of effected population groups	
Hungary[1]	not automatically performed	yes (mapping infrequent)	not automatically performed	not in place
Germany[2]	yes	yes	yes	in place and functioning in some states
England & Wales[3]	yes	yes	yes	in place and functioning
Finland[4]	yes	yes	yes	for individual cases in (relatively) rare diseases; no statistical alert algorithms in place
France[5]	yes	yes	yes	in place and functioning
The Netherlands[6]	yes	yes	yes	in place and functioning

Fields marked in green identify good/best practice. Fields marked in yellow identify areas for potential improvement.

[1]Csohán, personal interview (NCE) 2005, [2]van Treeck, personal interview (lögd nrw) 2005, [3]Hawker (HPA Birmingham) & Weinberg (City University London), personal interview 2005 [4]Ruutu & Takkinen, personal interview (KTL) 2005, [5]Bulletin *epidémiologique hebdomadaire* 2005, [6]*Infectieziekten* Bulletin, 16 number 05 2005c

In Hungary, the information generated from the surveillance data is not automatically available, but could be analysed from the available data on request [Csohán, personal interview (2005)]. In contrast the five other countries regularly perform their data to information. For example England and Wales generate information about locality and age-group. Further details are available from a voluntary enhanced surveillance system for some infectious diseases (e.g. Tuberculosis, Meningococcus) [Hawker, personal interview (2005)]. Regarding automatic early warning applications Hungary presently not use this tool. In Germany automatic early warning is implemented only in some states like e.g. in North Rhine-Westphalia. An example is the bar chart called barometer, which represents trends for each of the notifiable disease in North Rhine-Westphalia. The zero line indicates the expected value. The bars represent the deviations of the number of reported diseases of the current 4 weeks from the value expected from the historical data (see figure 4.1) [Reintjes et al. (2001)]. In Finland, France and the Netherlands different early warning applications are in place and functioning.

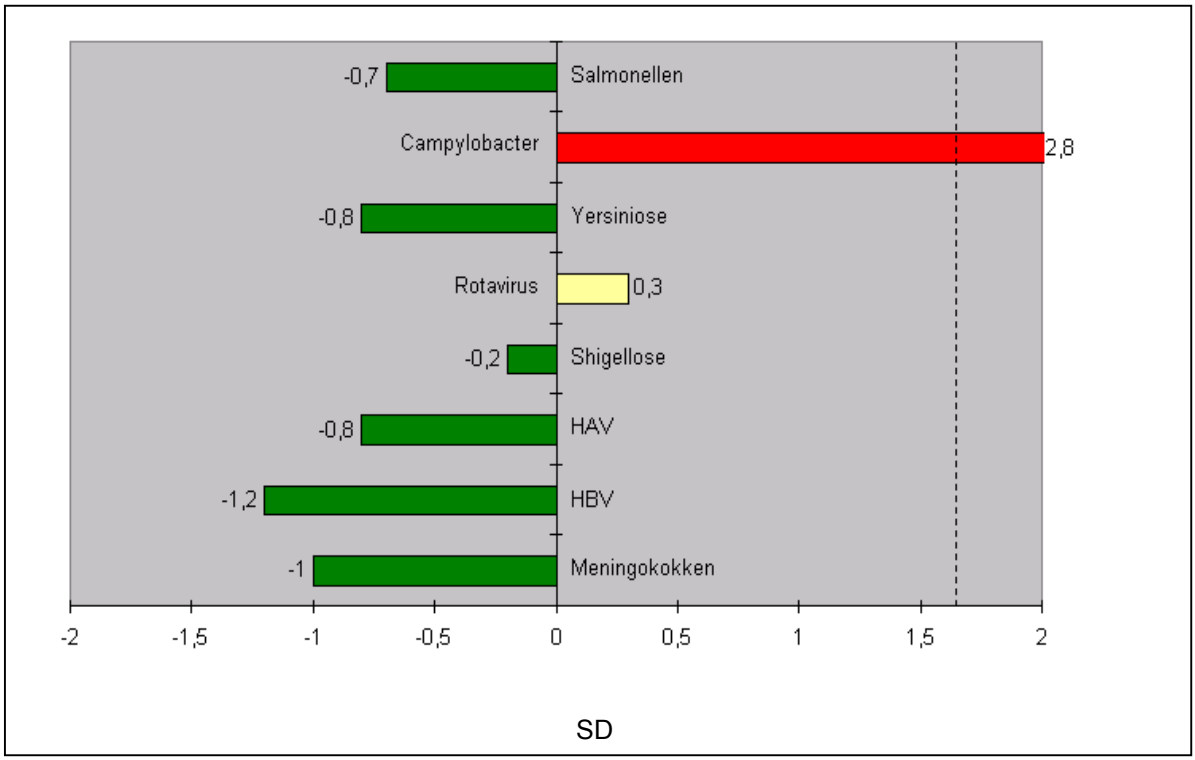


Figure 4.1: Infectious Disease Barometer North Rhine - Westphalia end of the week 28/2005, LOEGD 2005

4.5 Outbreak investigations

Outbreak investigations focusing on searching for the potential source, which may prompt further action (withdrawal of a product, warning to the public, closure of restaurants or identification and care of a susceptible exposed people) [Declich and Carter 1994]. Therefore outbreak investigations should be adequate in detection, coordination, funding and reporting. As well standardised data collection is needed to control rapidly. Guidelines and data collection forms are a basis for standardisation.

Regarding “outbreak investigation” the criteria compared in this benchmarking (see table 4.5) are whether standardised data collection were in use and whether descriptive and analytical investigation were performed.

Table 4.5: Standardised data collection and epidemiological investigations for notifiable diseases in six European countries, June 2005

country	standardised data collection - guidelines and data collection forms in use	epidemiological investigation	
		descriptive	analytical
Hungary [1]	yes	generally performed	not a common practice
Germany [2]	yes	generally performed	occasionally performed, frequency varies by region
England & Wales [3]	yes	generally performed	all significant outbreaks
Finland[4]	yes	generally performed	performed in a limited number of epidemics only if new information is likely to be achieved
France[5]	yes	generally performed	all significant outbreaks
The Netherlands[5]	yes	generally performed	all significant outbreaks

Fields marked in green identify good/best practice. Fields marked in yellow identify areas for potential improvement.

[1]Csohán, personal interview (NCE) 2005, [2]van Treeck, personal interview (lögd nrw) 2005, [3]Hawker (HPA Birmingham) & Weinberg (City University London), personal interview 2005). [4]Ruutu & Takkinen, personal interview (KTL) 2005, [5]Hawker et al. 2005

Guidelines and standardised data collection forms are in use for outbreak investigations in all selected countries. Regarding descriptive epidemiological investigation the study could identified good or rather best practices. All selected countries generally described their cases by the three epidemiological parameters (time, place and person). In Hungary the investigation is mainly concentrated on a descriptive analysis of the outbreak. Analytical studies are not a common practice [Csohán (2004)]. The other five countries selected in the study perform analytical outbreak investigations (e.g. cohort studies, case control studies, case case studies) for significant outbreaks [van Treeck, personal interview (lögd nrw) 2005, Hawker (HPA Birmingham) & Weinberg (City University London), personal interview (2005), Ruutu & Takkinen, personal interview (KTL) 2005, Hawker et al. (2005)].

4.6 Data dissemination

Data dissemination and communication of findings are undoubtedly as important as the collection and analysis of the data [van Loock (1994)]. Appropriate feedback must be given to those providing the data to demonstrate their usefulness and to stimulate further reporting. Cooperation is no one-way street: Public health professionals responsible for taking action in

response to surveillance data must receive the information timely and in an appropriate format for their use [Krämer & Reintjes (2003)]. A creative design for dissemination will receive greater attention. Key decision-makers need simple, understandable information. Therefore using data as interpreted graphs and maps accompanied by a short summary text is useful. The data should be provided on a regular basis and the surveillance reports should be timely. Dissemination can take place in a variety of ways, such as local and national bulletins, intranet, internet, presentations, newsletters or reports. Increasingly, electronic communications (web sites, online newsletters or online bulletins) are being used to enhance this process [Berkelman et al. (2002)].

The criteria compared in this study are the frequency and dissemination format of national bulletins. In addition the study compared whether additional web-based information systems for the public are available (see table 4.6).

Table 4.6: Data dissemination for notifiable diseases in six European countries, June 2005

country	bulletin				additional web-based information system
	name	frequency	dissemination	URL	
Hungary[1]	Epinfo	weekly	printed and online.	http://www.oek.hu/oek.web?to=839&nid=41&pid=5&lang=hun	not available
Germany[2]	Epidemiologisches Bulletin	weekly	printed and online	http://www.rki.de/nn_389374/DE/Content/Infekt/EpidBull/epid_bull_node.html_nnn=true	http://www3.rki.de/SurvStat (updated weekly)
England & Wales[3]	Communicable Disease Report Weekly (CDR)	weekly	online	http://www.hpa.org.uk/cdr/	not available
Finland[4]	Kansanterveys	monthly	printed and online	http://www.ktl.fi/portal/suomi/julkaisut/kansanterveyslehti/	http://www3.ktl.fi/stat/ (updated weekly)
France[5]	Bulletin epidémiologique hebdomadaire	weekly	printed and online	http://www.invs-sante.fr/beh/	not available
The Netherlands[6]	Infectieziekten Bulletin	monthly	printed and online	http://www.rivm.nl/infectieziektenbulletin/	http://www.rivm.nl/isis/ (updated daily)

Fields marked in green identify good/best practice. Fields marked in yellow identify areas for potential improvement.

[1]OEK ((Johan Béla) Országos Epidemiológiai Központ) 2005, [2]RKI (Robert Koch Institut) 2005b, [3]HPA (Health Protection Agency) 2005, [4]KTL (Kansanterveyslaitos) 2005 [5]InVS (Institute de veille sanitaire) 2005 [6]RIVM (Rijksinstituut voor Volksgezonheid en Milieu) 2005

All selected bulletins are accessible via internet. The frequency of publications is either weekly or monthly. In Hungary the National Center of Epidemiology provides the weekly printed *Epinfo*. This bulletin provides standard data tables, articles on infectious disease problems, relevant international incidents and information of outbreaks. In Germany the weekly *Epidemiologisches Bulletin* is published at national level. The bulletin including data, text, discussions, graphics, description of effected population groups, regional distribution, time series analysis. The data can also be accessed and used via an internet application. Other examples are the dissemination tools in Finland and the Netherlands. In Finland a weekly updated www-version is available for the public and includes comments and epide-

miological observations. The data format allows compilations of tables and trend analysis by the user. Actual figures and summary comments are also routinely reported in the monthly bulletin, the *Kansanterveys-lehti*. Thus in the Netherlands the *Infectieziekten Bulletin* is published at national level every 4 weeks. Feedback of up to date situation is updated daily and access able via Internet.

4.7 Vaccination programmes

Vaccination programmes in EU member states vary widely in different features like regulations, vaccination schedule, coverage, or organisational structures [Levy-Bruhl (1998)]. To follow the incidence of vaccine preventable diseases it is not only useful to measure the burden of disease, but also to evaluate the performance of the vaccination programme. Therefore the existence of vaccination programmes as well as the vaccination coverage can be regarded as useful benchmarks.

The criteria for the comparisons are current immunisation schedule, vaccination coverage for Measles, Mumps and Rubella at 24 month and incidence data for vaccine preventable diseases (see table 4.7).

Table 4.7: National vaccination programmes in six European countries, June 2005

country	childhood vaccination programme	vaccination coverage (in%) MMR at 24 month	incidence data available
Hungary[1,2,3]	DTwP, IPV, OPV, Hib, MMR, HepB, dT, BCG	> 99	for all
Germany[1,4,5]	DTaP, IPV, Hib, HepB, MMR, Var, dT, aP	80 - 85	for all (data availability varies between states)
England & Wales[1,6,3]	DTaP, Hib, IPV, MenC, MMR, BCG, Td	80 - 83	for all
Finland[1,7,8]	DTaP, Hib, IPV, MMR, dtap, BCG	93	for all (except tetanus)
France[1,4,9]	DT, a/wP, IPV, Hib, MMR, HepB, BCG, Rubella, T	83 - 90	for all (except pertussis, mumps, rubella & Hib)
The Netherlands[1,4,1]	DTaP, DTwP, IPV, Hib, MMR, dT, MenC, HepB	95	for all (except mumps, tetanus)

Fields marked in green identify good/best practice. Fields marked in yellow identify areas for potential improvement

[1]EUVAC.NET 2005, [2]Csohán, personal interview 2005, [3]NCE 2005, [4]Hawker et al. 2005, [5]Survstat@RKI 2005, [6]CDR weekly, Volume 15, No: 12, 2005, [7]Ruutu & Takkinen (KTL), personal interview 2005, [8] KTL 2005b, [9]InVS 2005b,[10]RIVM 2005c

Diseases covered in the national vaccination programmes (0 - 24 months) in the six countries are to a great extent similar. Reported vaccine coverage is diverse. Here Hungary shows the highest coverage for MMR at 24 months (>99%). Concerning the incidence data for vaccine preventable diseases only Hungary and England & Wales have for all diseases available data.

4.8 Evaluation

Surveillance systems should be evaluated periodically to ensure that important public health problems are under consideration and that useful information for disease prevention and control is collected and distributed. In addition the goal of this instrument is to enhance the efficiency and effectiveness of surveillance systems. The performance of surveillance systems can be judged by using a series of attributes, including sensitivity, timeliness, representativeness, positive predictive value, acceptability, flexibility, simplicity, and costs. The evaluation of a surveillance system should be concluded with an assessment of its structure and usefulness, considering its mix of attributes in relation to its objectives. Recommendations should state whether the system should be continued unchanged and what specific changes, if any, should be made [CDC (2001)].

Generally, countries evaluate their surveillance systems using different objectives, attributes and purposes. Therefore the current study shows different examples of evaluations from the selected countries. In 2002 the Hungarian national surveillance system was evaluated on behalf of the EU commission. A peer-review was performed by Amela (Centro Nacional de Epidemiologia) and Fraser (CDSC London). It was an external evaluation without publication. In Germany the national public institute evaluated the surveillance system after the new Infectious Disease Control Law was introduced [Krause et al. (2003)]. In the Netherlands the electronic reporting system OSIRIS was evaluated for timeliness and completeness of infectious disease notification in 2003 [Ward et al. (2005)]. Another example is the currently evaluation of the surveillance system in France. It is a comprehensive study, including field exchange of expert opinions with other EU member states (e.g. Germany, The Netherlands).

5 Discussion

The results of the present study confirm that benchmarking national surveillance systems as a new tool for the integration of communicable disease control in Europe is applicable. The selected benchmarking partner countries for this study were useful because of best practices in different areas of their surveillance systems for communicable diseases and the availability of data in these countries. In addition, it becomes obvious that Hungary has a well functioning system for communicable disease control and prevention. Nevertheless some areas with opportunities for improvement in the national surveillance system could be identified. Based on these findings a number of recommendations are given in chapter 6.

The study could demonstrate that different case definitions and classifications still exist amongst EU member states. This hinders international comparisons of epidemiological data (e.g. burden of disease and disease trends). Comparable case definitions, according to the EU case definitions [Commission Decision No 2002/253/EC], are the most fundamental criterion in communicable disease control at national and international level. Within the Hungarian national surveillance system changes from traditional case definitions to those referring to EU guidelines are recommended. This will improve comparability of notification data with other member states and thus enhance the integration of Hungary in European networks of communicable disease surveillance systems.

Timeliness of reporting was one of the most difficult criteria to be investigated because of differences between and within national surveillance systems. In this study, average values were identified which can only serve as rough indicators to demonstrate the heterogeneous timeliness of reporting. Nevertheless the timeliness depends on the format of reporting. To be effective, reporting must be timely and accurate. Previous studies demonstrated the benefits of electronic case reporting systems [Ward et al. (2005), Jajosky et al. (2004)]. For example, in the Netherlands it was observed that timeliness and completeness was improved after the introduction of the internet based reporting system OSIRIS [Ward et al. (2005)]. In Hungary timely and accurate data transfer from local to regional and national level is well established and based on an application of the central database EFRIR using an intranet. There are plans to incorporate reporting from laboratories directly into the central database. To build up an effective surveillance system this progress should be strengthened.

As timely surveillance data is the basis for early Public Health action, early warning applications should be used for timely visualisation of data. Good/ best practices for timely data use and early warning applications are in use in several countries (see table 4.4). For example

the Infectious Disease Surveillance Information System (ISIS) in the Netherlands is responsible for timely distribution of descriptive epidemiological reports and early warning signals to professionals in Public Health. It provides the infrastructure for the collection of incidence data for the data analysis, interpretation and systematic reporting. ISIS allows Public Health experts to assess the current situation within a few seconds. The system is updated on a daily basis (www.rivm.nl/isis/) [RIVM (2005)]. Unfortunately no such system is in place in Hungary.

The control of an outbreak depends on early detection, followed by a rapid structured investigation [Hawker et al. (2001)]. The growth in international trade and travel has increased the likelihood that outbreaks will involve more than one country [MacLehose et al. (2001)]. For this reason effective outbreak investigation in each member state is an important need for the national and European-wide infectious diseases safety. In 2003 experiences were first made by Hungarian epidemiologists during an international training course in outbreak investigations. However, the performance of analytical studies is still not a common practice in Hungary. As it is the core tool to control, manage and prevent outbreaks wide spread knowledge, practice, and experience of analytical epidemiological outbreak investigations is crucial to uncover the source of infections and the route of transmission effectively.

Although benchmarking has been shown to be suitable to answer the research question, some limitations have to be considered. The current study tried to address all relevant factors for the benchmarking process although the available resources were very limited. Because of these limitations the data analysis could only be short and descriptive. The study started with the identification of applicable and internationally accepted criteria of surveillance systems that can be suitable for benchmarking. During the data collection and analysis process, all selected benchmarking criteria were operationalised into a set of specific benchmarks. This modification process helped to get information that is comparable. During this process the investigators had to rely on available information, expert opinions and professional experience. Since some data was heterogeneous and only of qualitative nature, not all benchmarks could be standardised and validated. In general, a benchmarking study should not aim to detect the mean. Benchmarking should search for best practices in order to adopt them at a larger scale. For a first study of its kind, this could only be achieved to a limited extent. Nevertheless, the current study provides several operationalised benchmarks that should be the basis for benchmarking processes of surveillance systems in the future. A gold standard for surveillance systems in various European countries is very difficult to achieve. This is due to some factors such as heterogeneity in disease burden, personnel and financial resources.

Despite these heterogeneities in surveillance systems, all countries need to share ideas on how to increase the quality of national and common European surveillance systems.

6 Summary of Recommendations

In general communicable disease control, prevention and surveillance is functioning well in Hungary. Areas where Hungary performs better than other countries include the performance of the vaccination programme and timeliness of reporting. In the light of Hungary's new role as member state of the EU and the limited available resources, the current benchmarking process identified some areas with opportunities for improvement. Based on this the following five recommendations are given:

Case definitions: Current efforts to modify traditional Hungarian case definitions towards EU case definitions (Commission Decision No 2002/253/EC) should be encouraged for all notifiable diseases. This will improve comparability of notification data between individual member states.

Data use for information and early warning applications: It is recommended to increase a timely use of data (incl. laboratory data) for the generation of information that can be used for prevention and control measures. In addition an introduction of early warning applications, including the use of algorithms, time series analysis etc., is suggested.

Outbreak investigations: Training and practice of leading Public Health experts in analytical epidemiology for outbreak investigations is a necessary component for disease control, especially for new or unknown health problems. As the performance of analytical studies in outbreak investigation is very rare the setting up of training and regular performance of analytical epidemiology in outbreak investigations is an urgent need. In cooperation with European networks (e.g. EPIET) and partners in other member states, it is recommended to establish training soon. As a starting point a first training course for all regional epidemiologists should be established in Hungary, not later than in 2006.

Evaluation of surveillance system: It should be ensured, that the national surveillance system will be evaluated on a regular basis. Such an evaluation process should include a comparison with recent developments of surveillance systems at an international level. A similar study to the current investigation including benchmarking, should be repeated after the integration process in 3 - 4 years. This could ensure continuous quality improvement of the Hungarian surveillance system.

Benchmarking the surveillance systems of all EU member states: In the light of the integration and improvement of surveillance systems and facing the great amount of found het-

erogeneities in this benchmarking study it is useful to benchmark the surveillance systems of all EU member states. Such an initiative should be undertaken or supported by relevant European institutions (e.g. ECDC).

7 Acknowledgements

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1.1 Questionnaire *Benchmarking of National Surveillance Systems in Europe* (englisch)

Benchmarking of National surveillance systems in Europe is an EU funded project between Hungary and Germany. The project aims to compare National surveillance systems from six European countries (Hungary, Germany, The Netherlands, England & Wales, France, Finland), in order to identify strengths and weaknesses of the Hungarian surveillance system for communicable disease prevention and control. Your opinion as expert is very important for us! Thank you very much for your time and consideration.

	date:
name & position:	country:
email:	phone:

1. Do you think benchmarking of National Surveillance System in Europe is needed?
☐ yes ☐ no
please explain why:

2. Regarding benchmarking of National surveillance systems in Europe, which indicators (benchmarks) do you think are most useful?
please name:

3. Do you know about evaluations of a surveillance system in your country?
☐ yes ☐ no
If yes, what was evaluated and when? (Please obtain citations if possible.)

4. In your opinion what are the strengths and weaknesses of your National surveillance system for communicable diseases in terms of following components:

Case definitions	strength: weakness:
Timeliness of reporting	strength: weakness:
Data dissemination	strength: weakness:
Outbreak detection	strength: weakness:
Public Health action	strength: weakness:
National vaccination programmes	strength: weakness:
Training in Surveillance	strength: weakness:

5. What data sources of your country would you recommend for benchmarking projects?

6. I agree that you contact me again for further questions. □ yes □ no

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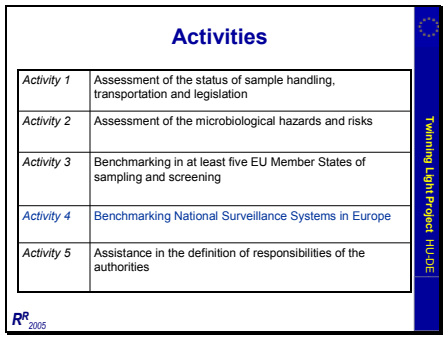
1.2 Presentation at the National Center for Epidmiology, Hungary, 27th of June 2005 (englisch)

slides 1,2



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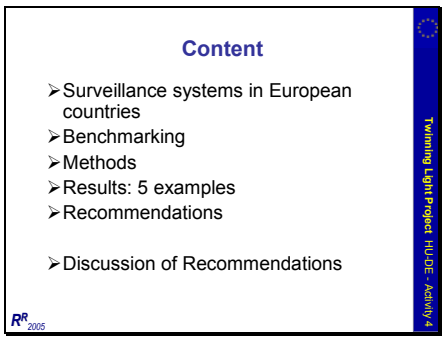
slides 5,6



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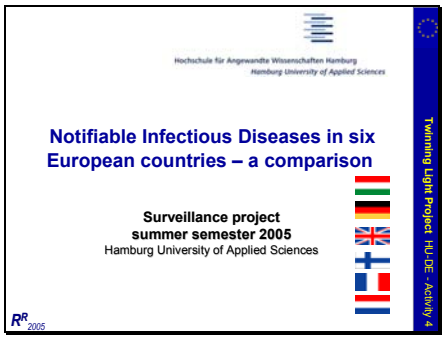

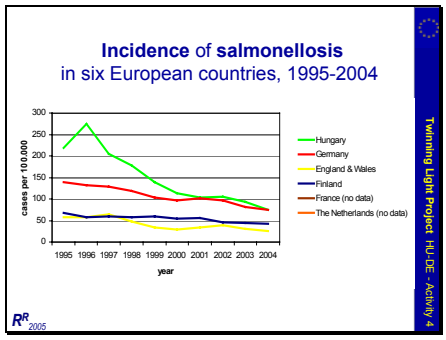

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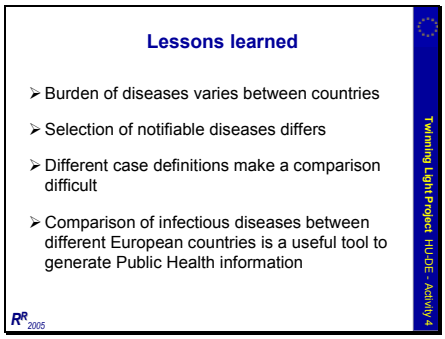

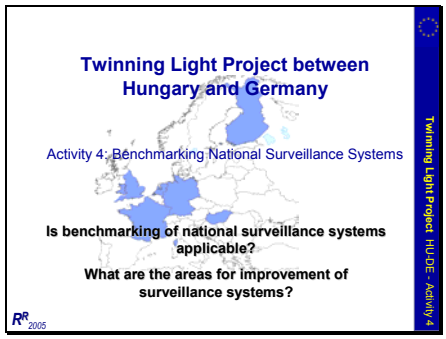

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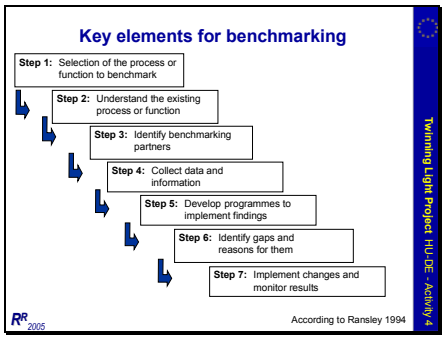

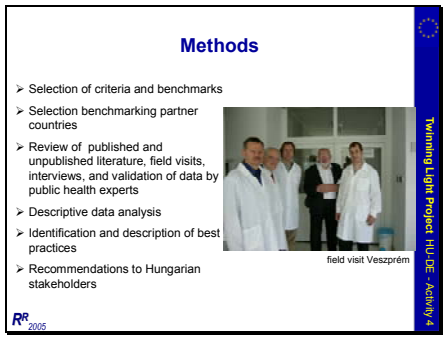

slides 13,14

Results from benchmark criteria

- Notifiable diseases
- Case definitions
- Timeliness
- Formats of reporting
- Data use
- Early warning applications
- Outbreak investigations
- Data dissemination
- Vaccination programmes
- Evaluation

According to: Guidelines for Evaluating Public Health Surveillance Systems [CDC, 2001] & Communicable Disease Control Handbook [Hawker et al., 2001]

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Results from benchmark criteria

- **Notifiable diseases**
- **Case definitions**
- Timeliness
- Formats of reporting
- **Data use**
- **Early warning applications**
- **Outbreak investigations**
- Data dissemination
- **Vaccination programmes**
- Evaluation

According to: Guidelines for Evaluating Public Health Surveillance Systems [CDC, 2001] & Communicable Disease Control Handbook [Hawker et al., 2001]

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slides 15,16

Notifiable diseases in six European countries, June 2005

country	number of notifiable diseases / agents reported by law	financial incentive is given to physicians to notify
Hungary[1]	**69** diseases (with personal data) **13** diseases (without personal data)	no
Germany[1,2]	**22** diseases/groups (with personal data) **6** agents (labour without name) **47** agents (labour with name)	no
England & Wales[1]	**30** diseases	~ € 4.-
Finland[3]	**70** diseases	no
France[1]	**26** diseases	no
The Netherlands[1]	**35** diseases	no

[1] Hawker et al. 2005, [2] RKI 2005, [3] personal interview P. Ruutu & J. Takkinen (KTL) 2005

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Case definitions for notifiable diseases in six European countries, June 2005

country	case definitions are in use	classification with a three-tiered system (confirmed, probable, possible), according to EU recommendation[8]
Hungary[1,2]	yes	in progress
Germany[1,3]	yes	yes
England & Wales[1,4]	mainly for food poisoning, not for all diseases	no
Finland[1,5]	yes	no, all cases lab confirmed
France[1,6]	yes	yes
The Netherlands[1,7]	yes	yes

Fields marked in green identify good/best practice. Fields marked in yellow identify areas for potential improvement

[1]Hawker et al. 2005, [2] personal interview A. Csohán (OEK) 2005, [3] RKI 2005, [4] personal interview D. Harding (HPA, London) 2005, [5] personal interview J. Takkinen (KTL) 2005, [6] InVs 2005, [7] RIVM 2005, [8] Commission Decision No 2002/253/EC

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slides 17,18

Data use and **early warning applications** in six European countries, June 2005

country	information regularly generated from data set			automatic early warning application
	time series analysis	regional distribution (incl. mapping)	description of effected population groups	
Hungary[1]	not automatically performed	yes (mapping infrequent)	not automatically performed	not in place
Germany[2]	yes	yes	yes	in place and functioning in some states
England & Wales[3]	yes	yes	yes	not yet identified
Finland[4]	yes	yes	yes	for individual cases in (relatively) rare diseases; no statistical alert algorithms in place
France[5]	yes	yes	yes	in place and functioning
The Netherlands[6]	yes	yes	yes	in place and functioning

Fields marked in green identify good/best practice. Fields marked in yellow identify areas for potential improvement

[1] personal interview A. Csohán (OEK) 2005, [2] personal interview U. van Treeck (ögd nrw) 2005, [3] personal interview J. Hawker (HPA Birmingham) & J. Weinberg (City University London 2005), [4] P. Ruutu & J. Takkinen (KTL) 2005, [5] Bulletin *épidémiologique hebdomadaire* 2005, [6] *Infectieziekten* Bulletin, 16 number 05 2005 & RIVM/SIS 2005

RR 2005

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Outbreak investigations in six European countries, June 2005

country	standardised data collection - guidelines and data collection forms in use	epidemiological investigation	
		descriptive	analytical
Hungary[1]	yes	generally performed	not a common practice
Germany[2]	yes	generally performed	occasionally performed, frequency varies by region
England & Wales[3]	yes	generally performed	all significant outbreaks
Finland[4]	yes	generally performed	performed in a limited number of epidemics only if new information is likely to be achieved
France[5]	yes	generally performed	all significant outbreaks
The Netherlands[5]	yes	generally performed	all significant outbreaks

Fields marked in green identify good/best practice. Fields marked in yellow identify areas for potential improvement

[1]personal interview A. Csohán (OEK) 2005, [2]personal interview U. van Treeck (ögd nrw) 2005, [3]personal interview J. Hawker (HPA Birmingham) & J. Weinberg (City University London 2005), [4]P. Ruutu & J. Takkinen (KTL) 2005, [5]Hawker et al. 2005

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slides 19,20

Vaccination programmes in six European countries, June 2005

country	childhood vaccination programme	vaccination coverage (in%) MMR at 24 month	incidence data available
Hungary[1,2,3]	DTwP, IPV, OPV, Hib, MMR, Hep B, dT, BCG	> 99	for all
Germany[1,4,5]	DTaP, IPV, Hib, Hep B, MMR, Var, dT, aP	80 - 85	for all (data availability varies between states)
England & Wales[1,4,3]	DTaP, Hib, IPV, MenC, MMR, BCG, Td	80 - 83	for all
Finland[1,7,8]	DTaP, Hib, IPV, MMR, dtap, BCG	93	for all (except tetanus)
France[1,4,9]	DT, aIwP, IPV, Hib, MMR, HepB, BCG, Rubella, T	83 - 90	for all (except pertussis, mumps, rubella & Hib)
The Netherlands[1,4,10]	DTaP, DTwP, IPV, Hib, MMR, dT, MenC, Hep B	95	for all (except mumps & tetanus)

Fields marked in green identify good/best practice. Fields marked in yellow identify areas for potential improvement

[1] www.ssi.dk/suvac/ 27th of May 2005 [2] Personal interview Csohán A. 2005, [3]www.oek.hu/oek.web?to=839&nid=41&pid=5&lang=hun, [4]Hawker et al. 2005, in press [5]RKI 2005 www3.rki.de/SurvStat , HPA: CDR weekly, Volume 15, No: 12, 24th of March 2005 http://www.hpa.org.uk/CDR/archives/2005/cdr1205.pdf, 28th of May 2005, [7] P. Ruutu & J. Takkinen (KTL) 2005, [8]www3.ktl.fi/stat/ , [9] www.invs-sante.fr/beh/ 28th of May 2005, [10]www.rivm.nl/sis/ 28th of May 2005

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Recommendations

- Modification of **case definitions** towards common EU case definitions should be encouraged
- Introduction of (automatic) **early warning applications** is suggested
- Training and practice in analytical epidemiology for **outbreak investigations** (e.g. in cooperatation with EU networks) should be established
- **Evaluation** of surveillance systems on a regular basis should be ensured
- **Further Benchmarking studies** (e.g. with all member states supported by ECDC) are useful

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slides 21,22

Lessons learned

Benchmarking is a **useful tool** to improve the quality of national surveillance systems.

The surveillance system in Hungary is **functioning well**, but there are also **opportunities for improvement**.

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Discussion

slides 23,24

Data dissemination in six European countries, June 2005

country	bulletin				additional frequently updated information sources (online)
	name	frequency	dissemination	URL	
Hungary[1]	Epinfo	weekly	printed and online	www.oek.hu	not available
Germany[2]	Epidemiologisches Bulletin	weekly	printed and online	www.rki.de	http://www3.rki.de/SurvStat (updated weekly)
England & Wales[3]	Communicable Disease Report Weekly (CDR)	weekly	online only	www.hpa.org.uk	not available
Finland[4]	Kansanterveys	monthly	printed and online	www.ktl.fi	http://www3.ktl.fi/stat/ (updated weekly)
France[5]	Bulletin epidémiologique hebdomadaire	weekly	printed and online	www.invs-sante.fr	not available
The Netherlands[6]	Infectieziekten Bulletin	monthly	printed and online	www.rivm.nl	http://www.rivm.nl/sis/ (updated daily)

Fields marked in green identify good/best practice. Fields marked in yellow identify areas for potential improvement

[1] Johan Béla Országos Epidemiológiai Központ (OEK), [2] Robert Koch Institut (RKI), [3] Health Protection Agency (HPA), [4] Kansanterveyslaitos (KTL), [5] Institute de veille sanitaire (InVS), [6] Rijksinstituut voor Volksgezondheid en Milieu (RIVM)

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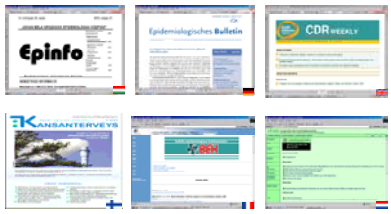
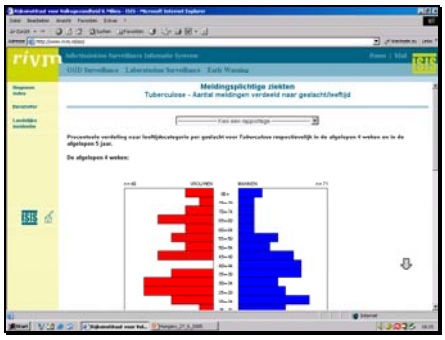
National Bulletins of six European countries, June 2005

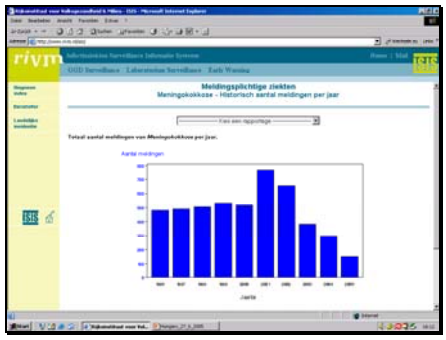


Hungary, http://www.oek.hu/oek.web?to=839&nid=41&pid=5&lang=hun, Germany http://www.rki.de/nn_389374/DE/Content/Infekt/EpidBull/epid_bull_node.html_nnn=true, England & Wales, http://www.hpa.org.uk/cdr/, Finland, http://www.ktl.fi/portal/suomi/julkaisut/kansanterveyslehti/, France, http://www.invs-sante.fr/beh/, The Netherlands, http://www.rivm.nl/infectieziekten-bulletin/

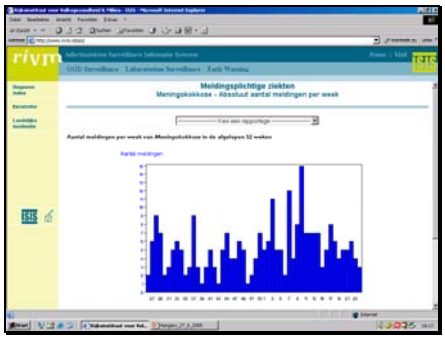
Twinning Light Project HU-DE - Activity 4

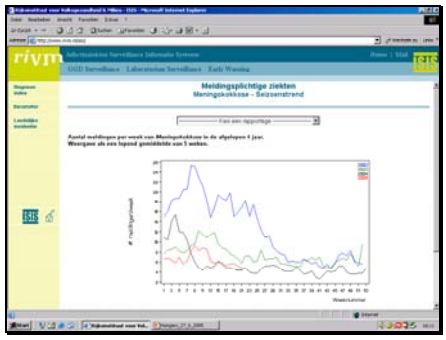
slides<25,26



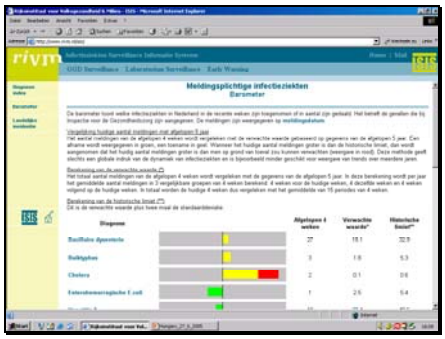


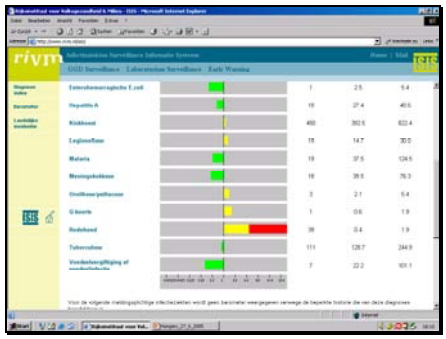
slides 27,28



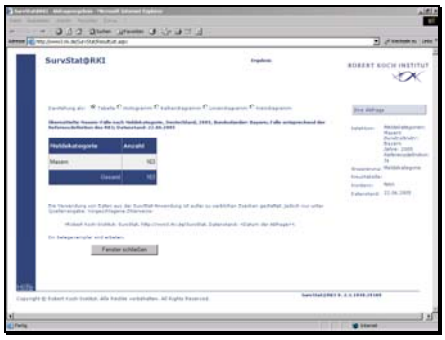


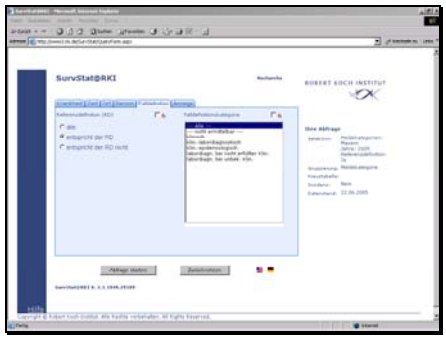
slides 29,30



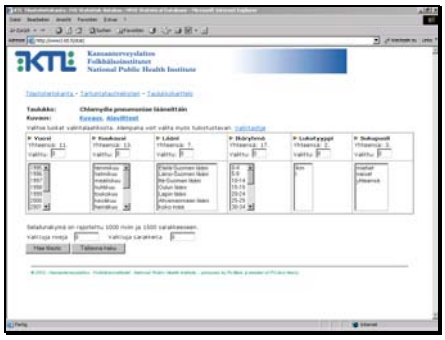


slides 30,31





slides 32,33



Timeliness and formats of Reporting in six European countries, June 2005

country	local level	via	regional level	via	national level	via
Hungary[1]	24 hours - ~ 3 days	paper phone	2 - 3 days	electronic	2 - 3 days	electronic
Germany[2]	~24 hours	paper, phone,	up to the third working day of the first week after reporting	electronic	up to the third workday of the second week after reporting	electronic
England & Wales[3]	~24 hours - 2 days	paper, phone	7 days	electronic	up to 7 days	electronic
Finland[4]	~ 24 hours – 2 weeks	paper, phone	1-day – 2 weeks	electronically by remote access to their area's data in the national register	1 day – 2 weeks (median 7 days for laboratory notifications from sample date to central data base)	electronically directly from laboratory and on paper from physicians
France[3]	~24 hours - 5 days	paper, phone	not yet identified	electronic	1 - 5 days	electronic
The Netherlands[3]	~24 hours - 3 days	paper, phone, email,	------	--------	in general less than a week	electronic

[1] personal interview A. Csohán (OEK) 2005, [2] personal interview U. van Treeck (ögd nrw). 2005, [3] J. Hawker et al. 2005, [4] P. Ruutu & J. Takkinen (KTL) 2005

RR 2005

Twinning Light Project HU.DE - Activity 4

2 Pressemitteilung in der Tageszeitung *Hamburger Abendblatt*

Hilfe in Ungarn

Gesundheitsexperte

Im Rahmen der Osterweiterung der EU kommen die Gesundheitsdienste der neuen Mitgliedsstaaten auf den Prüfstand. So unterstützt der Public-Health-Experte und Epidemiologe Prof. Dr. Ralf Reintjes von der Hamburger Hochschule für Angewandte Wissenschaften (HAW) den ungarischen Gesundheitsdienst. Dabei geht es um Hilfe im Kampf gegen Infektionskrankheiten und im Teilprojekt "Benchmarking von nationalen Surveillance-Systemen in Europa" um das System der Krankheitsüberwachung.

hpfs

erschienen am 28. Juli 2005

Vollständige Url des Artikels: http://www.abendblatt.de./daten/2005/07/28/463983.html

[modifiziert nach der Pressemitteilung von Thelen M, Reintjes R und Jeorgakopulos K. HAW Hamburg 2005]

3 Surveillance of Sexually Transmitted Infections in a Hungarian and European Perspective

Introduction: Hungarians surveillance system for sexually transmitted infections (STIs) changes its organizational structures currently. The objective of this paper is to give an overview about networks, programmes and projects of STI surveillance in the European Union (EU). In addition the study aims to benchmark criteria of STI surveillance in six European countries, in order to give recommendations to the new STI surveillance working group at National Center for Epidemiology of Hungary.

Methods: Literature review and benchmarking process of national surveillance systems for STIs from six European countries (Hungary, Germany, The Netherlands, England & Wales, France, Finland) was done.

Results: Several networks, programmes and projects are established and functioning at the European level. Hungary is already participating in most of them, but not in all networks examined in the study (e.g. ESSTI). The benchmarking shows that most of the compared criteria, like e.g. type of STI surveillance (sentinel versus universal), vary by the six European countries selected in the study.

Discussion: A Gold standard of surveillance systems in various European countries is very difficult to achieve, because of their heterogeneity backgrounds in disease burden, in personal and financial resources etc.. Nevertheless this study could demonstrate that benchmarking of national STI surveillance systems is a useful tool to get ideas, in order to raise the quality of national STI surveillance systems. This study identifies some areas with opportunities for improvements in Hungary, like e.g. establishing contacts with EU networks or generation of non-aggregate data to get information that can be used for focused prevention.

Introduction

European-wide studies show that sexually transmitted infections (STIs) are a major Public Health challenge in the European Union (EU) [Fenton et al. 2001, 2004]. Recent increases in STI incidence highlight the need for systems that effectively monitor STI trends and distribution in a timely and efficient manner, in order to inform public action [Lowndes et al. 2004]. Nevertheless across EU member states, considerable variations are existing in the structure and performance of current EU STI surveillance systems. Therefore all countries need to share ideas to raise the quality of their national systems to combat the increasing incidence of STIs [ESSTI 2005].

In Hungary the National Institute of Dermato-Venerology (DV) was responsible for the surveillance of STIs until 2005. In July 2005 the communicable disease department of National Center for Epidemiology constituted a new STI surveillance working group to enforce the nationwide surveillance system for STIs in Hungary. The first priorities will be to collect the data from recent years and to evaluate them. In addition building up the dissemination of STIs information in Hungary and contacting European networks are important goals [Várkonyi, personal interview 2005].

The objectives of this study are to summarize activities of STI surveillance at European level, as well as to review best practices in STI surveillance at national level across Europe. In addition the review aims to give recommendations to the new Hungarian STI surveillance working group, in order to enforce its STI surveillance.

Methods

In order to get an overview about networks, programmes and projects of STI in the EU the study reviewed published- and unpublished literature.

Components of the survey questionnaire of ESSTI (www.essti.org/docs/quaire_sti_survpt1.pdf) were used as a guideline during interviews with Hungarians experts at the National Center for Epidemiology, to get a comprehensive understanding of the current STI surveillance system in Hungary.

A benchmarking study was performed with the steps described by Ransley [Ransley 1994]: England & Wales, Finland, France, Germany, Hungary and The Netherlands were selected as international benchmark partner countries. This selection was choosen because co-operations with these partner countries have been already established during the study "Benchmarking of National Surveillance Systems in Europe" from Reintjes and colleagues [Reintjes et al. 2005].

Benchmarking criteria were taken from the studies "Surveillance systems for STIs in the European Union: facing a changing epidemiology" [Lowndes et al. 2004] and "Benchmarking National surveillance systems" [Reintjes et al. 2005].

Following criteria were compared in the benchmarking analyses:

- STI case definitions
- Guidelines for STI case management
- Mandatory STI case reporting systems
- STI sentinel systems

Results from the two studies of Lowndes et al. and Reintjes et al. were compared with the data from Hungary.

The study gives in overview about relevant European networks on STIs including HIV/AIDS. But for the benchmarking analyses HIV/AIDS was excluded.

"Good/best practice" examples were sketched, in order to get ideas for the national STI surveillances system of Hungary.

Recommendations were presented to Hungarian Public Health experts at the Hungarians National Center for Epidemiology on 27th of July 2005.

Results

The study identified several activities in the field of STI surveillance across Europe, which will be described here, each with the point of view from Hungarians participation:

The **European Surveillance of Sexually Transmitted Infections (ESSTI)** network was established in 2001. ESSTI is funded by the European Commission and it currently comprises 22 EU member states plus Iceland, Norway and Turkey [ESSTI 2005]. Hungary is not participating in this network yet. Under the direction of Dr. Kevin Fenton (Health Protection Agency, London), 25 countries collaborate in this network. The network aims to improve collaboration, build capacity and facilitate robust dissemination of information on STIs across Europe. ESSTI has an epidemiology and a microbiology section. The epidemiological activities focus on gonorrhoea, chlamydia and syphilis. In addition the ESSTI Coordination Centre set up an early warning system for STI outbreaks across Europe called “ESSTI Allert” in 2003. A structured report form is used for active reporting, and collaborators are requested to submit information about an event as soon as it occurs. Information on outbreaks is immediately distributed across the network [ESSTI 2005]. The network has a website (www.essti.org/) with a pool of available information and further country-specific links. From 2002 to 2003 a detailed comparison of surveillance systems for STIs in the EU were done under the lead of Dr. Fenton and Dr. Lowndes. This study could demonstrated that the heterogeneity of current surveillance systems complicates direct comparison of STI incidence rates, because standardised case definitions, screening programmes, etc. are not available [Lowndes et al. 2004].

The **International Union against Sexually Transmitted Infections (IUSTI)** is a non-profit organisation whose object is the achievement of international cooperation in the control of STIs, including HIV (www.iusti.org). IUSTI includes the Regions Europe, Africa, North America, Latin America, Asia Pacific. Currently the **Europe Region** is under direction of Prof. Angelika Stary [IUSTI 2005]. IUSTI and the European Office of the World Health Organization have produced European STD guidelines in 2001 (www.iusti.org/guidelines.pdf) [Bingham 2002].

The **Inventory of Resources for Infectious Diseases in Europe (I.R.I.D.E.)** is a project funded by Directorate General SANCO of the European Commission (www.iride.cineca.org). This network includes a computerized databank of resources for the control of infectious diseases, including STIs. Hungary and 30 other countries participate this EU network. Currently Marta Melles, Majoros Akosne and Ida Czumbel are the Hungarian gatekeepers in IRIDE.

The goal is to have the opportunity for sharing technology and facilities by knowing specific locations, contact points and procedures in each member state and other near countries [IRIDE 2005].

The **Basic Surveillance Network** collect data on infectious diseases (incl. STIs in some countries) in the EU-area. The network is funded by the European Commission and administers by Swedish Institute for Infectious Disease Control (www.eubsn.org).The database is updated once a month. Hungary and 25 other countries participate this network. Approximately 40 different infectious diseases are collected with the goal to give information on trends [EUBNS 2005]. The dataset of collected diseases varies by countries (e.g. gonorrhoea will be collected from Finland, but not from other countries like e.g. Hungary and Germany). The website gives the opportunity to choose each disease and country to get information about incidences.

HIV/AIDS Surveillance in Europe (EuroHIV) is network, founded by the European commission, thats co-ordinates the surveillance of HIV/AIDS in the WHO European Region (52 countries) since 1984. EuroHIV is a WHO and UNAIDS collaborating Centre. Hungary is already participating this network. It aims to improve and share European HIV/AIDS surveillance data in order to get better inforation for disease prevention, control and care. Its objectives include making international comparisons, assessing trends, characterising affected populations, predicting disease burden and evaluating surveillance methods. The website gives an overview about its activities. Thus mid- and end-year reports of HIV/AIDS surveillance in Europe are available online at www.eurohiv.org [EuroHIV 2005].

Under the direction of Mrs Zsuzsanna Jakab, the **European Centre for Disease Prevention and Control (ECDC)** is currently building up its European-wide network of disease experts and scientists to identify, assess and communicate current and emerging threats to human health from infectious diseases [ECDC 2005]. STI and HIV/AIDS are one of the prioritised areas in 2005 - 2006. It remains to be seen in the future, what specific activities the ECDC will support in the field of STI surveillance.

The HIV/AIDS Department of the **World Health Organistation (WHO)**, working through its regional offices and country support activities, provides technical and financial support to countries scaling up their efforts in improving quality and completeness of STI surveillance information. The key areas of work include improving quality and completeness of STI data at country level through training, technical and financial assistance, developing surveillance guidelines; strengthening research and laboratory capacity; assessing regional and global burden of STIs; promoting better utilisation of STI surveillance data for monitoring and evaluation of STI/HIV intervention activities [WHO 2005].

In 1996 the WHO and the **United Nations Programme on HIV/AIDS (UNAIDS)** initiated a working group on global HIV/AIDS and STI surveillance to improve the surveillance in sexually transmitted infections at national, regional and global levels. The UNAIDS/WHO working group on global HIV/AIDS/STI surveillance published guidelines for sexually transmitted infections surveillance in 1999 (www.who.int/hiv/topics/me/sti_surveillance/en/). This document gives an overview about components like case reporting, prevalence assessment and monitoring, assessment of STI syndrome etiologies, antimicrobial resistance monitoring and special studies. This listed components provide a framework for STI surveillance that can be adapted for use in most countries [WHO 1999].

The World Health Organization Regional Office for Europe funded a programme on STIs and HIV/AIDS (www.euro.who.int/aids) to reduce the transmission of, vulnerability to and impact of STIs in the European Region. The programme offers online information on epidemiological surveillance and specific country information (contacts, STI and HIV/AIDS data). In addition the WHO collect, analyse and present quantitative data on infectious diseases in the WHO European Region, in order to provide a standardized, timely and complete picture of the epidemiology of important infectious diseases. The centralized information system for infectious diseases (CISID) is a data set, compiled from reports submitted by member states (www.data.euro.who.int/cisid/). Data on STI are updated yearly. Data from Hungary and other countries are currently incomplete.

To be pointed out in the field of STI surveillance is the **second generation HIV surveillance** initiated by WHO and UNAIDS. Second generation HIV surveillance system includes HIV surveillance and AIDS case reporting, STI surveillance to monitor the spread of STI in populations at risk of HIV, and behavioural surveillance to monitor trends in risk behaviours over time. This key components are used to warn of changes in levels of infections and to explain them [WHO 2005]. STI surveillance plays a special role in second generation HIV surveillance, because trends in the incidence and prevalence of STIs reflect the occurrence of risky sexual activities. STI incidence and prevalence data can thus contribute to the monitoring of trends in the riskiness of sexual behaviour, and potential exposure to HIV infection. Strengthening STI surveillance is therefore an important component of second generation HIV surveillance [WHO 2005]. WHO and UNAIDS published guidelines for second generation surveillance in 2000. In addition training in the second generation HIV/AIDS surveillance for the countries of central and eastern Europe and central asia is offered by Andrija Stampar School of Public Health in Zagreb (www.surveillancezagreb.org). This programme is coordinated by WHO, *Gesellschaft für Technische Zusammenarbeit (GTZ)* and other partners (e.g. Hamburg University of Applied Sciences). Within this training a modul in surveillance of STIs is offered [Andrija Stampar School of Public Health 2005].

In the light of Europe-wide surveillance the multiformat peer-reviewed bulletin **Eurosurveillance** is a useful source to get information in the field of public health surveillance. Eurosurveillance has a print - and an online version (www.eurosurveillance.org/) with several articles about STI surveillance across Europe.

In addition the journal "**Sexually Transmitted Infections"** is a good information tool**.** It is the first international journal dealing with issues of sexual health and medicine (www.sti.bmjjournals.com/). "Sexually Transmitted Infections" is the official journal of the *British Association of Sexual Health and HIV*. It is a peer reviewed journal for health professionals and researchers in all areas of sexual health. "Sexually Transmitted Infections" publishes original work on the clinical, epidemiological, and laboratory aspects of sexual health, sexually transmitted infections, and HIV/AIDS [STI 2005].

Benchmarking national STI surveillance systems in Europe

The benchmarking identified differences between the components under consideration in the six STI national surveillance systems, which is presented by the following three tables. A short definition and description of criteria, compared in the benchmarking analyses, should give an introduction and overview about each benchmark:

STI case definitions and guidelines for STI case management:
Defining a case (e.g. syphilis, gonorrhoea) is a fundamental step in the development of a surveillance system. The case definition of a disease includes clinical manifestations, laboratory results, epidemiological information as well as levels of certainty (e.g. confirmed, probable or possible) [Buehler (1998)]. It is both a criterion for determining who is counted and a guide to local health departments for case investigations and follow-up. It ensures that the same measure is used across geographical areas. The case definition must be sufficiently inclusive (sensitive) to identify people who require public health attention but sufficiently exclusive (specific) to avoid unnecessary diversion of that attention [Berkelman et al. (2002)]. Definitions should be concise and explicit. And they should be used consequently In addition, the case definition must be usable for everyone on whom the system depends for case reporting. Thus using case definitions enhances the comparability of notification data between individual member states [Kraemer & Reintjes (2003)]. .

Effective management of STIs is one of the cornerstones of STI control, as it prevents the development of complications and sequelae, decreases the spread of those infections in the community and offers a unique opportunity for targeted education about HIV prevention. Appropriate treatment of STIs at the first contact between patients and health care providers is, therefore, an important public health measure. It is strongly recommended that countries establish and use national standardized treatment protocols for STIs [WHO 2003].

The first table shows the comparison whether classification of case definitions for STIs according to the EU recommendations are in use and whether guidelines for case management are existing.

Table 1: Classification of case definitions for STIs according to EU recommendations and Guidelines for STI case mangement in six European countries, July 2005

country	classification of case definitions for STIs, according to EU recommendation	Guidelines for STI case management
Hungary[1,2]	in progress	yes
Germany[1,3]	yes	yes
England & Wales[1,3]	no	yes
Finland[1,3]	no	yes
France[1,3]	yes	yes
The Netherlands[1,3]	yes	yes

[1] Reintjes et al. 2005 [in press], [2] Dr. Várkonyi Victoria personal interview, [3] Lowndes C M et al. 2004

The need for a common definition of diseases were strongly felt within the EU-community and in March 2002 the commission adopted a decision to establish case definitions for reporting communicable diseases to the Community network (Decision No 2002/253/EC) [EUBNS 2005]. In Hungary the implementation of EU case definitions is in progress. Germany, France and The Netherlands have a three tiered classification (confirmed, probable, possible) of STI case definitions, according to EU recommendations. England and Wales currently have no STI case definitions. Finland has case definitions, but not a three-tiered system according to the EU recommendations (see table 1). Since 2002 Hungary has new guidelines for STI case management [personal interview with Dr. Várkonyi 2005]. Six investigated countries are having guidelines for STI case management.

Mandatory STI case reporting systems

Within a mandatory STI case reporting system it is regulated by law, which STIs are obliged to notify. The mainstay of mandatory European STI surveillance systems is case reporting from clinicians and/or laboratories [Lowndes et al. 2004]. Mandatory STI case reporting varies according to responsible reporters, diseases to report and details of the reporting processes.

The second table shows the comparison between mandatory case reporting systems of STIs in the six selected countries.

Table 2: Mandatory STI case reporting in six European countries, July 2005

country	year introduced	notifiable STIs	Laboratory confirmation required	individual/ aggregate data (I/A)	Variables reported	Reporting frequency	Time delay to NSC
Hungary [1]	1952 (not for Ct)	Syph, Gc, Ct *	Syph, Gc, Ct	A	A, G,	monthly	1 month
Germany [2]	2001	Syph,	Syph, HIV	I	A, B, D, G, I, P, RF, T	daily	< 1 month
England & Wales [2]	1916	Syph, Gc, Ct *,	Syph, Gc, Ct	A **	A, D, G, O, P	quarterly	3 - 6 month
Finland [2]	1939	Syph, Gc,	Syph, Gc, HIV	I	A, B, C, D, G, I, P, R, S	weekly	< 1 month
France [2]	not identified yet	None	NA	NA	NA	NA	NA
The Netherlands [2]	1976-98	None	NA	NA	NA	NA	NA

Ct, Chlamydia trachomatis; Gc, gonorrhoea; Syph, syphilis; NSC, National Surveillance Centre, not applicable (system not in operation in that country).

A, age; B, nationality/country of birth; C, clinic type; D, date of diagnosis; G, gender; H, HIV status; I, country where infection contracted; N, number of cases by region only; O, male sexual orientation; P, place of diagnosis; R, place of residence; S, site of infection; T, probable route of transmission; C, reason for testing; RF, other risk factor variables of relevance to STI transmission (eg, number of partners, history of STI; drug use; contact with sex worker; gender of sex partner; linked cases; etc).

* Mandatory reporting also for rare bacterial STIs (lymphogranuloma venerum, granuloma inguinale, and chancroid). In Hungary reporting also for: granuloma inguinale, herpes genitalis, condyloma acuminatum, lymphogranuloma inguinale, sexually transmitted chlamydia infection, chancroid, urethritis, nongonorrhoica, trichomonas, scabies

** In the England and Wales, an individual, patient based reporting (ProgrESS) system with an expanded dataset has been piloted in London and will be phased in throughout the UK over the next 2 years.

[1] personal interview with Dr. Várkonyi Viktoria, [2] Lowndes C M Sex Transm Infect 2004; 80:264-271

The system of Hungary includes approx. 124 dermato-venerology ambulances who are obliged to notify ten STIs to the National Centre for Epidemiology monthly in paper form. The data will be reported in an aggregated form. Age and sex are the only variables which are reported currently [Várkonyi, personal interview 2005]. In Germany, Finland and England and Wales, the STI case reporting of non-aggregated data is performed. In addition to the diagnosis several variables (e.g. date of diagnosis, male sexual orientation, history of STI, drug use, contact with sex worker, gender of sex partner, linked cases) are reported (see table 2). The reporting frequency ranges from daily to monthly. The Netherlands changed their, universal STI surveillance system completely into a sentinel system (www.rivm.nl/bibliotheek/rapporten/441100020.pdf].

STI sentinel systems

Sentinel surveillance is surveillance based on the collection sites as indicator data for the rest of the population, in order to identify cases of a disease early or to obtain indicative data about trends of a disease or health event [WHO 2001]. Examples are the use of a few local and/or regional health departments to report STI cases. One instance of sentinel surveillance is the use of a particular population group (e.g., monitoring the serology of syphilis infection among pregnant women as an indicator of trends in the general population). Sentinel surveillance is inappropriate for those situations where every case requires public health actions, e.g., poliomyelitis. In sentinel surveillance standard case definitions and protocols must be used to ensure validity of comparison across time and sites despite lack of statistically valid sampling [WHO 2001]. In addition a sentinel system will allow capture of data on sexual orientation, ethnic group, and country of origin as well as details of the condition(s) diagnosed [Bingham 2002].

The third table shows four benchmarks regarding STI sentinel reporting systems.

Table 3: STI sentinel reporting systems in six European countries, July 2005

country	year introduced	STIs	case reporting system/ laboratory reporting system	Variables reported
Hungary [1]	NA	none	NA	NA
Germany [2,3]	2003	Ct, Gc, syph, H, trichomonas, HIV, human papillomavirus, urethritis, pelvic inflammatory disease (PID), genital warts	case reporting	Individual, A, nationality/country of birth, D,G, I, P, O, Z,
England & Wales	not identified yet			
Finland	not identified yet			
France [2]	1986	Gc, Ct, Gc AMR	laboratory reporting system (RENAGO, RENACHLA)	Individual A, C, D, G, I, L, P, P, S
The Netherlands [2]	1999	Syph, Gc, Ct	laboratory reporting system (ISIS)	Individual A, C, D, G, L, P, S

Ct, Chlamydia trachomatis; Gc, gonorrhoea; Syph, syphilis, H, genital herpes, AMR, gonoccoccal antimicrobial resistance; not applicable (system not in operation in that country); NA, not applicable: system not in operation in that country:

A, age; C, clinic type, D, date of diagnosis; G, gender, I, country where infection contracted; L, type of laboratory test used; N, number of positive results only, by region; P, place of diagnosis; S, specimen type/site of infection. O; other risk factors variables of relevance to STI transmission (e.g. number of partners, history of STI, drug use, contact with sex workers, gender of sex partner, linked cases etc.); Z, probable route of transmission

[1] personal interview with Dr. Várkonyi Viktoria, [2] Lowndes C M Sex Transm Infect 2004; 80:264-271, [3] RKI 2005

No sentinel reporting currently exists in Hungary. In France and the Netherlands the organisation of STI surveillance is implemented in a sentinel type. A report of a review of the STI surveillance system and of the epidemiology of STIs in the Netherlands is published in 2004

[www.rivm.nl/bibliotheek/rapporten/441100020.pdf]. Thus in Germany a sentinel surveillance system for STIs does exist. All sentinel systems selected in the countries report several additional individual variables (see table 3).

Discussion

The current study identified several networks, programmes and projects in STI surveillance systems across the European Union. Hungary already participate in most of them, but not in all networks investigated by the study (e.g. ESSTI).
The benchmarking shows that most of the selected criteria vary by the six European countries selected in the study. The investigator identified some areas with opportunities for improvements. Nevertheless some aspects have to be to discussed:

The study identified relevant networks, projects and programmes in STI surveillance in Europe. However, important activities in STI surveillance across Europe could exist, which are not mentioned in this study. Nevertheless it becomes obvious that, currently no single, comprehensive source of information (e.g. incidence, trends) about STIs is existing in the EU.

For the benchmarking process data from other studies were used to compare them with data from Hungary. Therefore some data adopted from the study of Lowndes et al. [Lowndes et al. 2004] could have changed during the last year. Thus the data compared are not complete, because data of sentinel systems from England and Wales and Finland have not been identified yet. This fact limits the quality of the study.

The study is not able to give a comprehensive picture of the STI surveillance systems of the selected countries (e.g. laboratory reporting systems, screening programmes). Furthermore detailed information about the STI surveillance system in England and Wales is not given. Although United Kingdom is unique in having a dedicated network of treatment centres solely for the management of acute STIs, from which statistical returns form the basis of national STI surveillance programmes. Data on STIs diagnosed outside of this setting are captured by laboratory reporting or special sentinel surveillance programmes [Fenton et al. 2004].

A general point of discussion is that gold standards of surveillance systems in various European countries are very difficult to achieve, because of the heterogeneity of backgrounds in disease burden, personal and financial resources etc. in these countries [Reintjes et al. 2005]. Nevertheless this study could demonstrate that benchmarking of national STI surveillance systems is a useful tool to get ideas, of how to raise the quality of national STI surveillance systems.

Surveillance of STI is an important and difficult task [Reintjes et al. 1998]. Therefore it is recommended to the new STI working group at the *National Center for Epidemiology of Hungary* to contact the European Surveillance of Sexually Transmitted Infections (ESSTI) network, in order to become a member to transfer skills and experience. To report the Hungarians failing STI data to CISID should be ensured.

The ongoing process of standardised case definitions referring to the EU case definitions should be enforced. It is needed to enhance the quality of data reporting in Hungary. Furthermore standardisation of EU case definitions would enable more accurate estimation of the minimum population burden of STIs, as well as direct comparison of STI incidence across Europe.

Beside to collect and evaluate the data from the last years it is recommended to report and generate non-aggregate data to get more detailed information of STI cases. In addition it is recommended to enhance the existing STI surveillance (e.g. report risk factors variables of relevance to STI transmission: e.g. number of partners, history of STI, drug use, contact with sex workers, gender of sex partner), in order to get information about high risk groups (e.g. men who has sex with men, drug user, sex-worker). All additional information can be used for focused prevention and control measures.

In order to raise the quality of STI surveillance systems in Europe a comprehensive benchmarking study of STI surveillance is suggested.
A description of the method “benchmarking national surveillance systems” is given by Reintjes and colleagues in the final report of the EU funded twinning light project between Hungary and Germany called “Microbiological safety institution building at National Public Health and Medical Officer Service in Hungary” (currently final report is in processing). Figure 1 gives a summary of the recommendations, which will be given to the *National Center for Epidemiology of Hungary.*

Summery of Recommendations:	
➢	Establish contacts with ESSTI, in order to become a member to transfer skills and experience
➢	Modification of case definitions towards common EU case definitions should be encouraged [according to recommendation Reintjes et al. 2005]
➢	Reporting and generation of non-aggregate data, in order to get information about high risk groups (e.g. drug users, MSM, sex-workers) that can be used for focused prevention and control measures
➢	Comprehensive benchmarking study of STI surveillance systems is suggested

Figure 1: Summary of Recommendations to the National Center for Epidemiology of Hungary, 2005

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Eidesstattliche Erklärung

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Hamburg, November 2005 Martina Thelen