MANDATORY DISEASE REPORTING BY GERMAN LABORATORIES: A SURVEY OF ATTITUDES, PRACTICES AND NEEDS

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In 2000, the new German infectious disease control act replaced aggregate with individual case reporting. The process was facilitated by the simultaneous introduction of electronic data transfer within the public health system. Reporting laboratories have not been electronically connected to this network. A survey by means of a postal questionnaire was conducted in 2003 among 537 German medical microbiology laboratories to explore their reporting habits, preference for electronic reporting formats, and relevant software equipment. Almost 90% of the respondents indicated a reporting delay of no more than 24 hours and 45% were still manually filling in paper forms for reporting purposes. The introduction of electronic reporting formats was favoured by 74% of the laboratories although 33% were not using any microbiology-specific software and the remaining 67% listed 62 different products. Pilot projects with selected software manufacturers might help to pave the way for the implementation of a standardised electronic infectious disease reporting format in Germany.

Euro Surveill 2005;10(1):26-27 Published online Jan 2005
Key words: Germany, labo ratories, mandatory reporting, software, survey

Introduction

Mandatory disease reporting in Germany has been redefined with the enactment of the Infektionsschutzgesetz (the Protection against Infection Act) in 2000. One of the main innovations of the new legislation was the introduction of individual instead of aggregate case reporting through all levels of the public health system. One legal paragraph is devoted to laboratory reporting: it lists microbial pathogens that are notifiable to the local health department, mostly within 24 hours [1].

Concomitantly, in 2001, transfer of case reports from local to state health departments and to the federal agency, Robert Koch-Institut (RKI) in Berlin, was converted from a paper-based to an electronic system [2]. Clinicians and laboratory scientists, however, still report to the local health department in non-electronic format. Within laboratory information systems, diagnostic units typically communicate results in electronic format to a central storage facility where they are linked to other information, e.g. patient data. Notifiable data are printed out on paper and usually sent by fax to the local health department where they are manually re-entered for electronic storage.

In 2002, two surveys looked into the acceptance of the new surveillance system by German clinicians and local health departments [3, 4]. In order to complete the picture, we conducted a survey among German laboratories. Our main objective was to assess how the laboratories are handling their legal reporting duties, to what extent this process has been computerised and in how far they would like the current reporting system to change.

Methods

The survey took place in 2003 and addressed all German medical laboratories testing patient material for the presence of microbial organisms. Eligible laboratories were identified using the RKI address database and a list that had originally been compiled by the Lower Saxony State Health Department to track remaining polio stocks in Germany.

All these laboratories were sent a standardised, pre-tested, anonymous postal questionnaire collecting information on hospital affiliation, catchment area, organisms routinely tested for, reporting habits, use of laboratory software, future electronic reporting and current feedback preferences. Questionnaires were analysed with Epi Info 2002 (CDC, Atlanta, Georgia, USA, 2002).

Results

We identified 1556 laboratories of which 853 (55%) completed and returned their questionnaires. Three hundred and sixteen (37%) of the respondents were pathology and clinical chemistry laboratories that do not carry out tests for notifiable microorganisms. The remaining 537 facilities (63%) formed the actual study population. Approximately one third each was privately owned, part of a tertiary care centre or affiliated with a smaller hospital. Of 523 laboratories providing information on their catchment area, 349 (67%) received samples only from within their town and its immediate surroundings, 130 (25%) from their federal state and adjacent states, and 44 (9%) from the entire country and abroad.

Of 505 laboratories providing information on their reporting medium, 227 (45%) were still using paper forms that are filled in manually to report detection of a notifiable agent to the local health department. The others were using their ordinary results report or automated print-outs specifically generated for this purpose.

Delay between laboratory diagnosis and notification was reported by most respondents to be no longer than 24 hours. For the majority, their reporting duties required up to one additional working hour per week [TABLE 1].

Most laboratories employed microbiology-specific software packages [TABLE 1]. Of the 62 commercial products mentioned, none was used by more than 14% of the participating laboratories. An overwhelming majority of the participating laboratories were in favour of the introduction of electronic reporting formats [TABLE 2]. If they were to be introduced, 181 (46%) of 398 stated they would like to enter data directly into an internet mask, whereas 217 (54%) favoured automated data extraction.

TABLE 1

Reporting delay, reporting associated workload and use of software in German laboratories, Germany 2004

	N	%
Reporting delay (n=502)		
≤ 24h	446	89
> 24h	56	11
Additional workload due to reporting (n=520)		
≤ 1h/month	180	35
≤ 1h/week	219	42
≤ 1h/day	98	19
> 1h/day	23	4
Use of laboratory software (n=537)		
Yes	358	67
Software signalling notifiable microorganism (n=370)		
Yes	145	39

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2. Robert Koch-Institut, Berlin, Germany

TABLE 2

Laboratory scientists' attitude towards introduction of electronic to the local health department (n=466), Germany, 2004

Scientists' attitude	N	%
Urgently necessary	43	9
Good idea	301	65
Neutral	29	6
Unnecessary	66	14
Problematic	27	6

Discussion

Almost 90% of the laboratories studied reported notifying infectious organisms to the local health department within 24 hours. This enables timely surveillance and rapid intervention if necessary. The benefit comes at a reasonable cost: for more than 75% of the laboratories, disease reporting creates an additional workload of no more than 1 hour per week.

More than 66% of the participants would favour electronic reporting formats instead of the currently prevailing paperwork. Elsewhere, electronic reporting has been shown to be faster [5], less labour-intensive [6] and more complete [7] than traditional disease reporting. On the other hand, 33% of the laboratories in this survey do not use any laboratory software, and those that do are working with more than 60 different products. In the light of this heavily fragmented market, a uniform electronic reporting format is rather illusory in the near future. Past experience in Germany has shown that legislators are reluctant to impose standards regulating data transfer formats between healthcare providers and local health departments. Pilot projects with selected software manufacturers may be the way forward to promote national standards of electronic disease reporting and to catch up with European countries like the United Kingdom [8], the Netherlands [6] or Sweden [9], where such systems are already in place.

This was the first survey among German laboratories relating to practical implications of the Infektionsschutzgesetz. The survey response and the lack of non-responder data do not allow any safe assumptions as to the representativeness of the participating laboratories. It could be argued that laboratories with a keen interest in surveillance would have been more likely to participate in this study and might therefore have been overrepresented. As a result, we would have overestimated German laboratories' reporting compliance and enthusiasm for electronic reporting formats. The observed diversity of software products, however, would have probably been even more pronounced if all laboratories had participated.

Acknowledgements

We would like to thank Fabian Feil from the Lower Saxony State Health Department for providing the laboratory address list, and Anna Lukaschyk for entering the survey data.

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ORIGINAL ARTICLES

Surveillance report

ELECTRONIC REPORTING IMPROVES TIMELINESS AND COMPLETENESS OF INFECTIOUS DISEASE NOTIFICATION, THE NETHERLANDS, 2003

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In 2002, the internet based reporting system OSIRIS was introduced in the Netherlands and by the end of that year had fully replaced the paper-based reporting system. The objectives of OSIRIS were to improve timeliness and completeness of surveillance data on infectious diseases reported from regional to national level.

We compared the timeliness of infectious diseases reported by the conventional paper-based system in 2001 with those reported by OSIRIS in 2003. Two distict types of delay were compared: (1) total delay: defined as time between sympton onset and reporting at national level and (2) central delay: defined as time between regional and national reporting. Median delays between both systems were compared using the Wilcoxon Rank Sum-Test. We also compared electronic reports received via OSIRIS in 2003 to those received through the conventional system for 2001 for completeness of specific data fields. The Fisher exact test and the Mantel-Haenzel test with Yates correction were used to determine the significance of proportions of completed data fields in each system.

Results showed the median central delay was significantly reduced for all diseases in OSIRIS compared to conventional reporting system. Overall, the median central delay was reduced from 10 days (interquartile range 4) in 2001 to 1 day (interquartile range 1) in 2003. Except for cases of malaria, the total delay, from symptom

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