**Author’s response to reviews**

**Title:** Completeness and timeliness of Salmonella notifications in Ireland in 2008: a cross sectional study

**Authors:**

- Nathalie Nicolay (nathalienicolay@yahoo.fr)
- Patricia Garvey (patricia.garvey@hse.ie)
- Niall DeLappe (niall.delappe@hse.ie)
- Martin Cormican (martin.cormican@hse.ie)
- Paul McKeown (paulj.mckeown@hse.ie)

**Version:** 3  **Date:** 1 July 2010

**Author’s response to reviews:** see over
Dear Editors and Reviewers

We would like to thank you for the useful comments made. We hope the current answers and the amendments made in the report will satisfy you.

We answered specifically each of your comments below. On the overall, we agreed with all of them and we made specific amendments in the manuscript. The manuscript has been clarified consequently. We hope that it will satisfy you and that it will help to better understand the Irish surveillance salmonella system and the way we evaluated it.

We left the track changes as required in the manuscript. After discussion in house, we reviewed two critical points in the discussion regarding the interpretation of a distance effect at NSRL and the fact that isolates from the west are received faster than the other. We considered that the explanation given over-interpreted the results. The same for the explanation given on the fact that clinician were more prompt to notify than the lab. Retrospectively we though we did not have enough arguments to discuss these specific point the way we did it.

We are looking forward to receiving your final decision.

The authors.
Reviewer's report

**Title:** Completeness and timeliness of Salmonella notifications in Ireland in 2008: a cross sectional study

**Version:** 1 **Date:** 18 May 2010

**Reviewer:** Lisa King

**Reviewer's report:**
Major compulsory revisions
None

Minor essential revisions

Abstract

- Background
  The authors should clarify what cases are electronically reported: clinical and laboratory confirmed or only laboratory confirmed. All
It has been clarified. This evaluation was done on reported confirmed Salmonella cases. A confirmed case should legally have clinical and laboratory notifications. As required later on in your comments, we added in the method section the case definitions used for cases notification.

The last sentence of this section is not relevant for the introduction. It is a discussion point.

We take it out from the abstract.

- Methods
The authors need to add a sentence which describes how they did these evaluations (crossing CIDR with the NSRL data base). It is currently not clear in the abstract.

The method section has been detailed; we explained that the study completeness was done on non mandatory field taken from CIDR. We explained in the discussion why it is relevant to better filled out these specific fields. We explained in more details that the timeliness study was done using a merge between CIDR and the National Salmonella Reference laboratory data in order to be able to give an overview of the timeliness of the system (which encompass the serotyping and the phagotyping analysis).

- Results
The authors need to define “days” and “IQ” in the text before using the abbreviations.

We no longer used that abbreviation.

The “median total identification time” described in this section does not correspond to the definition cited in the methods section of the article. This point is addressed further on in the comments.

The median total identification time is the median time interval between sample collection and forwarding of the serotyping +/- phage typing results by the primary laboratory to the DPH. We amended the definition where appropriate;

- Conclusions
An “s” is missing from the word “professional” in the first line.

OK. It has been amended.

Why do the authors single out “ethnicity” among other important variables (eg date of symptom onset and country of infection) as a non-mandatory variable that health professionals should be educated about? Yes, it is the least complete, but is it more important than the other variables non-sufficiently completed? Who or what is “public health” or “PH”. The HPSC? The DPH? This needs to be clarified throughout the text of this article.
We singled out the variable ethnicity not because it was more important than the other insufficiently variables but as an example as it was indeed the least complete. We agree that it may be a bit confusing for the readers and we decided to take out this example from the conclusion. The conclusion is now more general in regards of the degree of completion.

The departments of Public Health (DPH) are the regional department based in each of the eight Irish Health Service Executive (HSE) areas. Public health should have been précised as the department of public health – it has been amended. When necessary in the text more details have been given.

Introduction
- First paragraph: were the 22 outbreaks detected in 2008? This needs to be clarified. How many of these outbreaks were detected by the system (the authors state in the abstract that the system is not timely enough to detect outbreaks).

The 22 outbreak were reported by public health physicians onto the system in 2008. It is retrospectively difficult to day if they had been or not detected by the system and it was not the purpose of this sentence. We wanted to give an idea of how bit is the “Salmonella problem” in Ireland.

Materials and Methods
- It is necessary to define the surveillance case definitions for the reader. We note “confirmed cases” in the methods section (paragraph 5). Are a laboratory and a clinical notification necessary to define a confirmed case?

Both notifications are indeed mandatory.

We clarified a bit the method parl and the description of the Salmonella surveillance system. According to the useful comments you gave us, we had the impression that our description was not good enough. We hope that all the clarifications brought in will be helpful.

The second last line of the discussion on page 13 talks about notification of “probable cases”. What is a “probable” case?

A confirmed case has a clinical and a laboratory notification (as required by the case definition). Even though we gave the case definition for the probable cases, we emphasized the fact that the study was done on confirmed cases only.

- Paragraph 1: CIDR was implemented in “16 primary laboratories in hospitals”. Out of how many? Are there any community laboratories in Ireland? Or do primary laboratories in hospitals analyse all stool specimens. The reader is looking for an idea of the coverage of this system and the population from whom these data are generated.

More details have been given in the manuscript. Regarding the private lab in Ireland, there is indeed a few of them (however, their number is unknown). By law, they must notify as do the other labs. The notification process is the same as the public lab.
The system covers the whole Irish population.

These details have been added in the manuscript.

- Paragraph 1: Clinical notifications are registered by the DPH. Are these non-laboratory confirmed clinical cases? From Figure 1 the reader understands that they are clinical suspicious of salmonella for which a sample has been taken but not yet processed. Or do clinicians report laboratory data feedback from primary laboratories? If so, this is not marked in figure 1. This needs to be clarified in the text and figure 1.

Clinicians should report all confirmed and probable cases which conform to the case definition for salmonellosis—a confirmed case to report laboratory feedback from the lab, and a probable case when they have a patient with clinically compatible symptoms who is epidemiologically-linked to a confirmed case.

We have made some changes in figure 1 as the previous figure was too confusing for the reader. The aim of the figure is to explain what time intervals have been calculated. We did not want to explain the complexity of the notification system. However, the figure can be taken as a schematic description of the system.

- How does the DPH match these clinical notifications with the laboratory notification and de-duplicate the system. Is there a unique identifier based on demographic characteristics that allows clinical and laboratory notifications to be linked as well as the link to NSRL data to be made. This should be clarified in the text.

At regional level, personal identifiers are available such as the name, surname, date of birth and address of residence of the case. These variables are used to match the various reports. It has been clarified in the test.

- How do clinicians notify the DPH of clinical/confirmed(?) cases? A standardised notification form?

Yes it is. Precision have been given in the manuscript.

- Last line of paragraph 1: how many “primary laboratories” do not have CIDR already in use? Are these again primary laboratories in hospitals or also in the community? This needs to be clarified.

As previously amended, the system covers the whole Irish population.

- What information do primary laboratories enter? Information only to species level? Is the NSRL the only laboratory carrying out further typing of isolates?

Yes the primary laboratories may report information to serotype level for a limited number of serotypes. Further analysis is performed at NSRL which receives all human Salmonella isolates from Ireland. It is the only lab that can carry out further typing of isolates. Such organization is feasible as Ireland is a small country and the absolute number of isolates is manageable for one reference lab.
The amended description of the system in the method part made it clearer.

- An “a” is missing from the second line of the paragraph “notifications flow”. OK.

- A general comment on the 5 calculated time intervals: certain intervals (numbers 2 and 3) are defined with inclusion in the text of the necessary component intervals e.g. “it encompasses interval 2, interval 3 and interval 4”. This is helpful for the reader. However, this is not done for Intervals number 1, 4 and 5. It would be helpful for the reader if the components of those time intervals were added.

We have reworded that part as it was not very understandable. Our aim was to assess the median time of each time intervals available in the surveillance system. We tried to describe these intervals and whether they were part of the clinical notification flow or lab or NSRL flows.

We amended seriously what we exactly did. We avoid the word component and we aimed to describe the different sequence in the various notification flows (clinical, laboratory, and NSRL)

*The sample collection - first notification interval* has a virtual component.

- The first sentence on page 8 contains a typo (“to DPH” and “to the DPH”)

We amended the sentence.

**Results**

**Paragraph 1:**
- Before comparing the 449 cases of the CIDR database with the NSRL database it would be helpful to know how many of those 449 cases were clinical or primary laboratory notifications, especially as the authors conclude that laboratory notifications are faster than clinical ones. How many cases of the 449 had both clinical and lab (not NSRL) data. How many are outbreak associated? The reviewer again thinks of case definitions (confirmed vs probable case as noted in the text) which are not provided here.

Asked information has been added in the manuscript. IN total 294 cases (71% of study cases) have had a lab notification from a lab live on the system. Retrospectively we are unable to determine what cases were part of an outbreak and unfortunately we cannot provide the manuscript with the info. There were circa 79 confirmed cases among the 22 outbreaks reported.

**Paragraph 3:**
- The interval name has been changed since the methods section: the word “collection” is missing after “sample”.

We amended the title.

- The IQs given in the text: (4-7d) are different than those given in table 2 (0-7d)
The true interquartile is 4-7 days, there was a typo in the table.

Paragraph 4, 5 and 6:
- Why do the authors not present the key intervals that they defined in the methods section? Instead of presenting the actual interval they present just the components of that interval. I am assuming that because of missing values, the reader cannot simply sum up the component elements to get the total interval value.

Thank you for this comment. The key interval was a confusing term for the reader. Because of missing value, we could indeed only present the components of each interval illustrated in figure 1. It was not our purpose to define many other key intervals other than those illustrated in figure 1 and the sample collection – first notification time interval. Consequently, we have changed the terminology and instead of talking about key interval, we defined each flow of information as a time sequence of illustrated interval in figure 1. We hope that this will bring out the confusion. As I mentioned above, figure 1 has been amended as well to better reflect the interval calculated.

Paragraph 6:
- Last sentence of page 9 has a typo “..are received to NSRL”

We amended the sentence.

Paragraph 8:
- The total interval (interval number 4) defined in the methods section (page 7) does not correspond to the interval result presented on page 10 (paragraph 2): Methods section: total interval = from date of onset illness to forwarding of NSRL results by primary laboratory to DPH
Results section: total identification time interval = from date of specimen collection and availability of NSRL results on CIDR
The total identification time interval is presented in the abstract.

The total identification time interval is defined as the time between the specimen collection and availability of NSRL results on CIDR. We amended the definition in the method section.

Paragraph 9:
- There is a typo in this sentence “..in notify..”
- Line 8: In the results section, the authors state that clinicians were more prompt in notifying cases than laboratories. Table 3 supports this result. However, in the abstract results section (line 5), the opposite result is presented (laboratories faster than clinicians). Error?

Yes it was a mistake. Rectification has been made. Clinicians notify more promptly than laboratories.

-Line 9: the authors say that such a comparison is confounded as laboratories non-live on CIDR notify their cases clinically. This clinical-laboratory “mixing” of notifications is not clear from reading the methods section (page 5 paragraph 2 line
8). How many labs not live on CIDR declare in this way and how many of the 449 cases in 2008 did they declare? Does this occur to a degree that would invalidate the comparison of notification types?

The comparison is valid as we made the comparison on cases who had both a clinical and laboratory notification from a lab live on CIDR.

Paragraph 10:
- The timeliness by serotype analysis was not described in the methods section. It needs to be added.

It has been added in the method section just following the description of the total identification time interval. Consequently we moved up the results by serotype just after the results of the total identification time interval.

- As done with other intervals, the authors need to define “interval for full identification at the NSRL”.

Details have been given in the method section. Basically it was the analysis of interval 5 (figure 1)

Paragraph 11:
- The last sentence has a typo “Dues..”

It has been amended.

Discussion
Paragraph 2:
- The first 2 sentences of this paragraph repeat directly the results data and should be removed or reformulated.

The two sentences have been shortened and reformulated.

- Among the explanations of CIDR records without NSRL dataset, the authors propose that some isolates may have been incorrectly classified as Salmonella. Who incorrectly classified the sample? The primary laboratory? If this is the case, why was the case left in the CIDR salmonella database?

Incorrect classification as a possible explanation is very very unlikely and was removed from the text. The most likely explanations are that you were unable to match due to insufficient identifier information or that the isolates were not referred. I agree

Paragraph 3 line 7:
an “s” is missing from “measure” in this sentence

It has been amended.

Paragraph 4 line 3:
what does the 58% refer to?
It referred to the completeness of the report of dates in CIDR. However, I left that out as it does not add anything to the discussion.

Paragraph 4 line 7:
How many laboratories are not live on CIDR? The authors do not give information on the coverage of their surveillance data. What proportion of laboratories in the countries potentially identifying Salmonella are using CIDR (either directly or indirectly through the DPH)?

A total of 20 out of 36 laboratories are not live on CIDR. however, the 16 lab live on the system notified 70% of cases. CIDR is indirectly used by those laboratories not live on the system (through the regional DPH) which guarantees a very high coverage.
In Ireland there are additionally very low numbers of private labs where Salmonella could be isolated. The clinician who has requested the microbiological examination and who has been made aware of the case is responsible for notifications. However, a study of the system sensitivity should be undertaken to assess the full coverage of CIDR.

Paragraph 5:
- According to table 2 this delay (interval 4) is 4 days and not 6 as stated in the text.

You are perfectly right. I double checked and I amended the result.

- There is a typo in line 3: an “s” is missing from “term"

OK.

Paragraph 6:
- In line 9, use of the term “through CIDR” here confuses the reader. In figure 1, the NSRL forwards results data to the primary lab but it is not shown that this is done via the CIDR system. This is additionally not clearly described in the methods section.

We hoped that details brought in the text will be helpful.

NSRL forwards its result to the primary lab that forwards them to the regional DPH. This is not done via CIDR at all. However, in the closed future, NSRL should be able to upload its result directly on the system. NSRL data is entered onto CIDR for cases who were diagnosed at a LIVE lab, and are not when the case was diagnosed at non-LIVE lab.

Because there is two different processes occurring depending on whether the primary lab is live or not, you need to describe both. However, the full timeliness analyses were only performed for the subset of cases for which NSRL can enter the data on CIDR (live primary lab cases). As the remaining primary labs are connected to CIDR, NSRL will upload a larger proportion of their data onto CIDR.
- In line 10:
  In table 2, the delay of interval 6 is the longest but the delay of interval 7 at 4 days is shorter than several other delays of 5 and 6 days. Why is 4 days considered “markedly extended” as is stated in the conclusion. Are laboratories requested to notify NSRL results to CIDR in real-time?

  This is markedly extended as the transfer of the results on the system is extremely simple and easy. Lab people have to “press the button” and results could be uploaded on the system almost in real-time. We clarified that in the test.

- In line 11: what does “reviewing typing information” mean? Feedback to primary labs? Data transfer to CIDR and the DPH?

  It is the review of information by HPSC of the NSRL data uploaded on CIDR.

Paragraph 7:
- line 1-2: It would be helpful to the reader to provide the delays of the other surveillance systems for comparison.

  Time intervals have been added in the manuscript. It was 14 days in South Wales in Australia and 16 days in King County Washington.
  - line 4 and 5: “laboratory” should be “laboratories”

  It has been amended.

- What does the last sentence mean? This sentence appears redundant considering the second sentence of the paragraph.

  It has been deleted because of its redundancy.

Paragraph 8
- The authors need to add the limitation that laboratories not live on CIDR notify cases clinically by the DPH (could be moved from the results section on page 10).

  Laboratory notifications from Laboratories that are not LIVE on CIDR, are represented on the system as clinical notifications.

Conclusions
- Line 1: the word “as” is missing from the end of the line.

  It has been amended.

Figure 1:
- The figure title talks of “confirmed cases” however the figure suggests that clinical notifications are made upon sample collection and thus without feedback of primary laboratory results.
The whole figure has been amended. We hope it will contribute to a better understanding of the notification process. Initially the aim of this figure was to explain the different time interval in the notification process. We amended it in a way that it explains how CIDR works (the general process) as well as the different time intervals interfering in the notification.

Table 2:
- In the title, the interquartile interval (IQ) is defined but in the table the IQR is noted.

OK. It has been amended.

- A column with N values should be given for the calculated intervals.

It has been added.

Discretionary revisions

Abstract
The last sentence of the abstract conclusions is not pertinent to the evaluation presented as it not based on any of the results in the manuscript.

We agree. It has been removed.

Introduction
- It is strange to find a paragraph describing the evaluation of surveillance system between the paragraphs describing the objectives of the system and the system itself. This paragraph would be better moved before the last sentence.

It has been moved down as suggested by reviewer.

Materials and Methods
- The authors should define the variables used in the analyses. Outcome: death or cured or cured with sequelae? Patient type= inpatient, outpatient, community sample?

Thank you for the suggestion. We think that these definitions won’t improve the meaning of the paper and we decide not to give these details.

Results
- Paragraph 4: The interval definition, which is defined in the methods section, unnecessarily repeated here.

It has been deleted.

Paragraph 6:
- The first sentence is a discussion point and not a result and should be moved from this section.

OK. It has been deleted.
Paragraph 9:
The last sentence of this paragraph is interpretation and should thus be in the discussion section.

We take it out. The paragraph limitations of the study in the discussion already discussed that specific point.

Discussion
Paragraph 5:
- In line 12 it would be clearer to reformulate “primarily laboratory notifications” as “initially reported by laboratories”.
OK. It has been amended.

Paragraph 6:
- Line 10: here it would be useful to cite the actual delay of 9.5 days.
We made this part of the paragraph clearer.

Conclusions
- Do the authors plan to extend this partial evaluation of the surveillance system to include other elements of an evaluation such as sensitivity, acceptability and positive predictive value? This would be an interesting continuation of this work to propose in the paper.

The current study evaluated the completeness and timeliness of the system. Intervals….Future work could include a repetition of these analyses after an appropriate time interval to see if there are improvements in these parameters, or extension of the evaluation to assess other aspects of the system such as sensitivity or acceptability of the system to users. However, we preferred conclude on the finding of the evaluation and the performance of the system today.

Figure 1:
- The lines styles differentiating “Source laboratory notification flow” and “Reference laboratory flow” is very similar and not easy to distinguish.

Figure 1 has been amended.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests: I declare that I have no competing interests
Reviewer's report
Title: Completeness and timeliness of Salmonella notifications in Ireland in 2008: a cross sectional study
Version: 1 Date: 6 May 2010
Reviewer: Karen keddy
Reviewer's report:
Minor essential revisions
please review errors in referring to Salmonella Enteritidis (p10 - 11), Due instead of dues (p11), health (reference 4).

It has been amended.

Discretionary revisions
The authors state that there were records in the CIDR for Salmonella that were not in the NSRL - what implications does this have for patient follow up and notification of outbreaks and disease?

None as the two systems are closely connected – we hoped the way we clarified the description of the system will be helpful.

Level of interest: An article whose findings are important to those with closely related research interests
Quality of written English: Needs some language corrections before being published
Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.
Declaration of competing interests: I declare I have no competing interests