

## New computerized tuberculosis surveillance system in Japan

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The initial computerized tuberculosis (TB) surveillance system was established in 1987 and revised in 1992 and 1998. In 2007, it was revised substantially, and so is considered a new system, although it still manages reporting and recording as before. Its new function is management of information of directly observed therapy short courses (DOTS) and contact health examinations. In Japan, TB statistics are compiled from this system, but the incidence of TB is also notified to the infectious surveillance system as with other infectious diseases, because the Tuberculosis Control Law was integrated into the Infection Law in 2007.

The new TB surveillance system since 2007 consists of two levels, i.e. local and central levels (Fig.). Local level means public health centers (PHC) and central level means the Ministry of Health, Labour and Welfare. There are 518 PHCs in Japan as of April 2007, all equipped with terminals of this system, which are connected to a central computer on nationwide official closed networks. The data entered at these terminals (local database: LDB) are sent to the on-line central computer at the same time. However, the central computer receives only the data that are necessary for evaluating TB control. Personal identification data are not sent to the central database (CDB).

Although there are 61 local governments (47 prefectures and 14 designated cities) governing 518 PHCs, their terminals are not connected to the computers at PHCs but are connected to a central computer. The local governments can only access the central computer, but they can see the output of data and download the data of those PHCs that they govern.

A monthly report is compiled from the CDB automatically at the specified time, and an annual report is also produced like the monthly report, but with sufficient time for correcting the data. The new system and its contents are outlined below.

### 1) Automatic assignment of reference number

In the previous system, the reference number was decided by the PHC, but in the new system, a unique reference number that does not reflect personal information is given by a computer automatically at each PHC. When a registered person moves out, the same reference number is used at the person's next PHC.

### 2) Faster registration

Registration was sometimes delayed at some PHCs due to waiting for confirmation of information. Therefore, a "temporary registration" function was created to help speed up the registration.

### 3) Function for automatically sending data upon transfer

Sometimes, 10% of registrants transfer out within one year at PHCs in urban areas. Therefore, a new function sends on-line all the data in the LDB excluding personal identification information (name, date of birth, address) to the next PHC. This reduces the workload of data entry and avoids manual data input errors.

### 4) New registration of relapsed cases under registration

Unlike most other countries, in Japan a periodic health check-up is given for persons who have completed treatment but are still under registration. The maximum period of this follow-up

is three years, during which some cases relapse. However, such cases were treated as initial onset of TB and were not reflected in the statistics. In the new system, once a person has been de-registered for the reason "re-treatment during follow-up", the relapsed person is registered again automatically with a new reference number in the computer.

#### 5) New judgment of treatment outcome

Treatment outcome by the cohort method is an important aspect of TB control. We reviewed the method of automatically judging treatment outcome which had been used since 1998. So far, "cure" or "complete" was judged at the time of six or nine months, although patients still continued treatment, because this long treatment period is common in Japan. In the previous system, there was no "transferred out", because cases in which the registrant moved out within six or nine months of evaluation were excluded from the scope of treatment outcome. This rule was reconsidered and the judgment is now similar to the international criteria: the categories "others" and "unknown" were excluded, and "transferred out", "treatment for more than 12 months" and "impossible" were added. "Cure" or "complete" is judged by the actual treatment regimen and the duration of treatment. The bacteriological situation under treatment is confirmed by culture result.

#### 6) Support of patient's treatment by DOTS and recording of results

The records of results on DOTS support are entered into the computer, and on the same screen, the treatment outcome can be checked. A person who moved out during treatment is judged as "transferred out", however, at the next PHC, the treatment outcome is judged again at the time of completion of treatment. It is also possible to operate according to the purpose of PHCs, since the system offers many items which the PHC can decide.

#### 7) Stronger search function

PHCs often need to search for specific registrants among all the registrants. Although the previous system had a search function, it was inadequate. The new system has both a quick search function and a detailed search function. In the latter, specific registrants can be searched with some conditions given by freely combining items and codes. The data of registrants searched can also be downloaded.

#### 9) Addition of contact management system

A new contact management system was created and added to only the PHC system as a subsystem, therefore its database is independent. The database of the subsystem has three levels, i.e. (a) initial patient, (b) contact groups, (c) contact people. If the initial patient is registered in the main system, his/her necessary information is imported from the database. There is a warning function, enabling the name of people and kind of warning to be checked by clicking on the warning function key. This is expected to prevent no health examination of contacts and missing examination records. It is also possible to print out official letters of recommendation or letters of action on health examination for the contacts.

In this way, the new TB surveillance system has many functions to assist staff working at PHCs, and is expected to effectively help regional TB control.

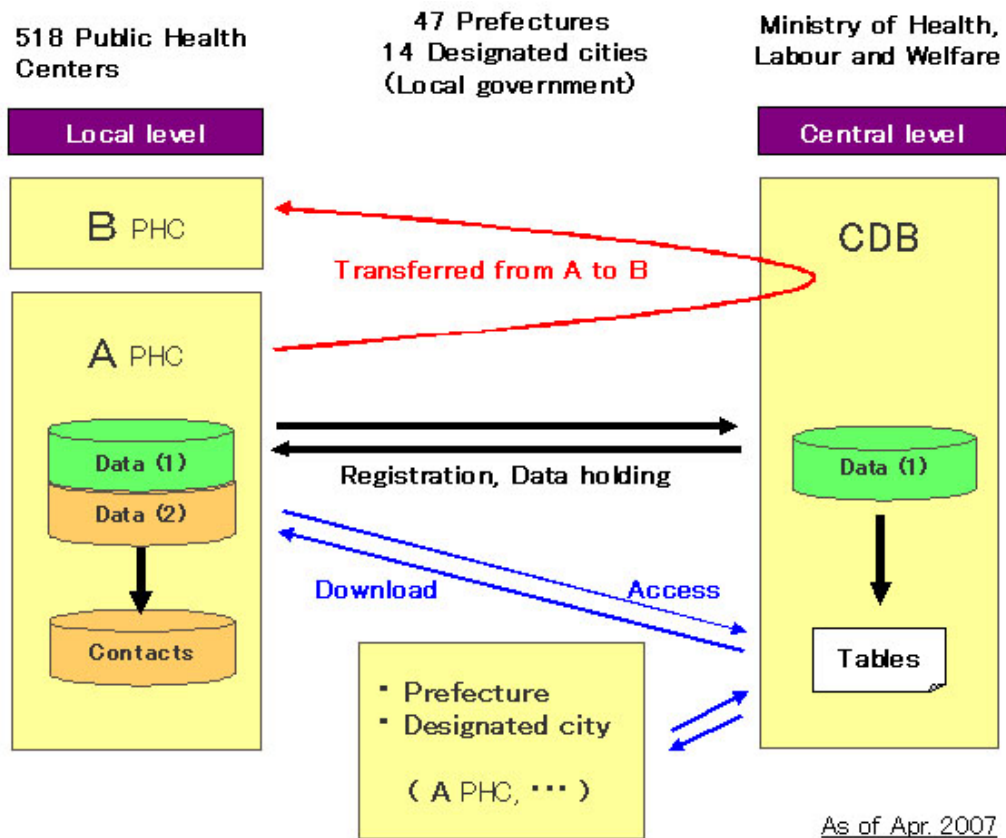


Fig. Schema of new computerized surveillance system in Japan since 2007