



APPENDIX AVAILABLE ON REQUEST

Research Report 154

**Part 2. Association of Daily Mortality with Ambient Air Pollution,
and Effect Modification by Extremely High Temperature
in Wuhan, China**

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**Appendix J. Standard Operating Procedure for
Mortality Data Collection in Wuhan**

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Quality Control and Quality Assurance for Mortality Statistics in Wuhan, China

Part 1: Policy background

Wuhan government released (Wuhan [1973] Number 131)

This policy required that mortality statistics must be gathered. After one year of preparation, the collection of mortality statistics in Wuhan began in 1975. The area included 7 urban districts and 2 suburban districts for a total of 9 districts. In 1984, the Wuhan hygiene agency found problems with the mortality statistics during these ten years and released documentation, Wuhan health [84] # 156, to try to standardize mortality statistics. In 1992, the National Health Department, Public Safety Department, and Civil Administration released Hygiene 1992 #1 for enforced management of birth and death certificates to standardize birth and death certificates for the whole country. According to this requirement, we promulgated and revised the working procedure of mortality statistics in Wuhan to improve the timing and accuracy of the data collection. With economic development and aiming to solve the new problems in mortality statistics, Wuhan Centers for Disease Prevention and Control (WCDC) released new documentation, Wuhan 2004 #39, concerning improved mortality reporting in Wuhan. It required all districts' CDC to strictly carry out the standardized procedure of mortality statistics and ensure the accuracy and timing of the data.

Part 2: Principle of mortality statistics reporting in Wuhan

- 1) According to mortality statistics procedures in Wuhan, medical death certificates are managed according to the home address registration.

- 2) All mortality statistics work will be centrally managed by the WCDC. The WCDC in each district will be responsible for verifying and filling out the medical death certificate.
- 3) There will be coordination and communication among the health agency, public safety agency, and civil department to improve the process of reporting mortality statistics in Wuhan.

Part 3: The responsibility for registration of mortality statistics

- 1) Wuhan is the death mortality monitoring station for all of China as well as for the Hubei province. It is required that mortality statistics accurately reflect the cause of death for the whole population in Wuhan. These statistics objectively reflect the population's life expectancy and satisfy the need for the people in Wuhan to know the mortality status.
- 2) Carry out the daily management of mortality statistics, consultation, and personnel training.
- 3) Carry out the quality control of mortality statistics, supervise mortality statistics in each district, and give technical guidance.
- 4) Verify and analyze the whole city's mortality statistics final report and report to the respective agencies. Provide accurate scientific evidence to the relevant agency for prevention, policy, and management.

Part 4: The responsibility of each district's CDC

- 1) The WCDC in each district is required to check the medical death certificate, make inquiries for missing items on the death certificate, and make certain that the death certificate meets the quality control requirement.
- 2) The District CDC will do statistics on medical death certificates every month and by street. It will verify the death with the public safety department. In the case of missing data or certificate, the CDC will require a supplemental death certificate and will investigate the information on the death certificate.
- 3) Every month the death certificate will be entered into the district computers according to ICD code. For unclear items on the death certificate, the district CDC will make an in-person home visit.
- 4) The software used for entry of death certificate information into the computer is Procedure for Residents Injury and Death Registration released by the Chinese health department.
- 5) Each season the district CDC will examine the quality of the death certificates, including infant deaths, will write a report of status, and will present this report to the WCDC.
- 6) The district CDC will supervise the hospital mortality statistics, conduct data auditing, and perform internal quality control and evaluation.

Part 5: Collection and reporting procedure for mortality statistics

- 1) For the people who died in the hospital, the hospital will provide the original and a copy of the medical death certificate. The hospital will stamp all medical death certificates. A copy of the certificate is given to the relative of the deceased. The relatives will bring that copy, their address registration, and their ID card to the CDC of their home district. The district CDC makes the third and fourth copy of the death certificate for the relatives. The relatives submit the third copy to the public safety department to stop their address registration, and the fourth copy is used for the cremation.

- 2) If the death certificate issued by the hospital is not stamped by the hospital, the district CDC will not release the third and fourth copies of the death certificate.

- 3) For people who died outside of the hospital or for the mobile population, the method for release of death certificates is listed below.
 - i) For people who died outside of the hospital, a record must come from the deceased individual's community or work organization. The record should include the time, location, and cause of death. The relatives of the deceased will bring this record, registration certificate, disease identification, and disease history to the district CDC, which will issue copies 1-4 of the medical death certificate. The third copy of the medical death certificate is used for the public safety department to stop registration. The fourth is used for cremation. The record from the community or the work organization is collected, stored, and maintained in the district CDC.

- ii) For the people who died outside their home community, the local district CDC will provide a medical death certificate, or the work organization will release a record. At the same time, the resident's community is also required to provide a record. The relatives will bring these two records, registration identification, and the deceased individual's disease history to the district CDC for the four copies of the medical death certificate. The third copy is submitted to the public safety department to stop their address registration, and the fourth copy is used for the cremation. The third and fourth copies are stored in the district CDC.
- iii) For the mobile population, the medical death certificate is needed for cremation. A record should come from the organization the deceased person worked with or the community in which the deceased lived. The relatives are required to bring these records to the district CDC to obtain the medical death certificate.
- 4) For an abnormal death related to public safety management, the public safety department is required to provide a record to the relative. The relative will bring that record, their address registration, and their ID card to the CDC of their home district. The district CDC issues the medical death certificate and makes the third and fourth copy for the relatives. The relatives submit the third copy to the public safety department to stop their address registration, and the fourth copy is used for the cremation.
- 5) The relative is required to verify and sign the medical death certificate. If anyone assisted the relative in this process, he or she must show their identification, the deceased's identification, and the documentation described in Part 5, section 3.
- 6) District CDC has to register daily all death certificates issued on that day.

Part 6: Management of mortality statistical data

- 1) Each district CDC centrally manages their death certificate and other related statistics data.
- 2) Each district CDC should establish a procedure for collecting original records data, registration data, account data, and archival statistical data. The purpose of this is to insure the evidence and accuracy of the data.
- 3) Each district CDC should establish a procedure for data verification, examination, and revision. For the statistical tables, the individual responsible for the table should sign or stamp his or her name. In addition, the tables should be approved by his/her supervisor, who must also sign or stamp, using the unit's formal stamp. The head of the CDC and statistics personnel are responsible for the accuracy of the data.
- 4) Each district CDC is encouraged to improve their statistical tables to make full use of these data for the benefit of society and the public. Each district CDC is required to provide statistical data, edited data, and publication free or with a charge.
- 5) Each district CDC should archive all mortality data annually.
- 6) All computer data should be stored in CD format.
- 7) Original medical death certificate data should be stored for 50 years.

Part 7: Quality control of mortality statistics

- 1) Make certain of the completeness and the timing of the data sets (death card data sets, population data sets). Report to the higher agency in a timely manner. At same time, finish up all data entry in the past month and back up information.
- 2) Agreement rate for total death report should be >98%. This standard is from the statistical data of the public safety department.
- 3) Rate of infant death report. Reference criteria: urban 9 per 1,000; suburban 18 per 1,000.
- 4) Rates for unclear diagnosis and others is < 2%. The sum of these two categories is < 2% in urban and < 3% in suburban.
- 5) Complete rate of death card is >98%.
- 6) The correct rates for ICD codes and statistical category is >98%.
- 7) Validity rate for the report is > 98%.

Part 8: Application of mortality statistics data.

Each district CDC should analyze the death mortality data according to the report of specific cause of death, including calculating cause-specific mortality, death constitute, and life expectancy. The district should list the first 10 causes of death in descending order, as well as infant mortality. In addition, the data on death trends should be mapped and the first 10 causes

of death should be depicted in a figure. Wuhan City is required to put their mortality data, text, tables, and figures into a book.