

# WinEpi: Working In Epidemiology. An Online Epidemiological Tool

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## Abstract

WinEpi (acronym of Working in Epidemiology) is designed as a cooperative web in order to provide epidemiological tools to scientific and academic community, as a further development of Win Episcopo 2.0 and WinEpi Ratios 2.0. With the acquired experience of these applications, we decided to design a new application taking account the next basic requirements: easy distribution and update procedures, free access and independence from operative system. Also it was important to strengthen the learning ability with step-by-step guidelines and solved examples. So, WinEpi has been implemented in a web server using ASP language and it is possible to access from URL <http://winepi.unizar.es>. Applications and examples are available in English and Spanish. Website has modules with different access level as user (only released versions), author (cooperative work) and moderator (schedule tasks). Different formulae have been included in order to evaluate diagnostic tests, to calculate sample size, to measure the disease frequency, to estimate risk factors in observational studies and also some additional tools for basic statistical calculations. The only requirements to use WinEpi are a previous registration (for statistical use only) and availability of Internet access. Everybody can submit proposal to implement new formulae, suggest examples and collaborate as beta-testers or translators. Copyright of all material belongs to contributors that share them with the community.

## Record of the project

Between 1996 and 1999 several versions of two epidemiological tools were released: Win Episcopo 2.0 (Thrusfield et al, 2000) and WinEpi Tasas 2.0 (Ortega et al, 2001). They were part of PhD thesis of Ignacio de Blas, and they were programmed for Windows 3.1 or upper, with Borland Delphi 2.0. From this moment we detected that it would be necessary further evolutions and upgrades of the software, but releasing way (as freeware) and lack of funds and time make impossible this task. In current moment, with the acquired experience on these applications, we decided to design a new application taking account the next basic requirements: easy distribution and update procedures, free access and independence from operative system. These are the key characteristics of WinEpi, the acronym of Working in Epidemiology.

## Stage one of WinEpi project

During 2005-2006 we are reprogramming completely a new consolidated version of Win Episcopo and WinEpi Tasas, that has been called WinEpi, and it is available in URL: <http://wienpi.unizar.es>. The access to the application is completely free and it is organized with a modular structure, that allows easy maintenance and upgrading.

Basic idea in this stage is to provide a open tool for epidemiological calculations, with a more comprehensive interface. All modules have three steps:

1. Introduction to the calculation: basic concepts related with the target of the module and the need data to further calculations. In this step information about data format and availability of information is required (Figure 1).
2. Data gathering: in this step is collected data needed for further calculations. A brief explanation about target of calculation is made at the beginning, and data are required depending on options selected in previous step. Before to follow to step 3, data are checked to test valid limits, correct values and/or potential incongruities (Figure 2).

3. Results: in the final screen data used for calculations are showed (with additional information as total values, expected values, and so on) and results corresponding to these data. An customized explanation is included before crude results in order to make easy and understandable (Figure 3).

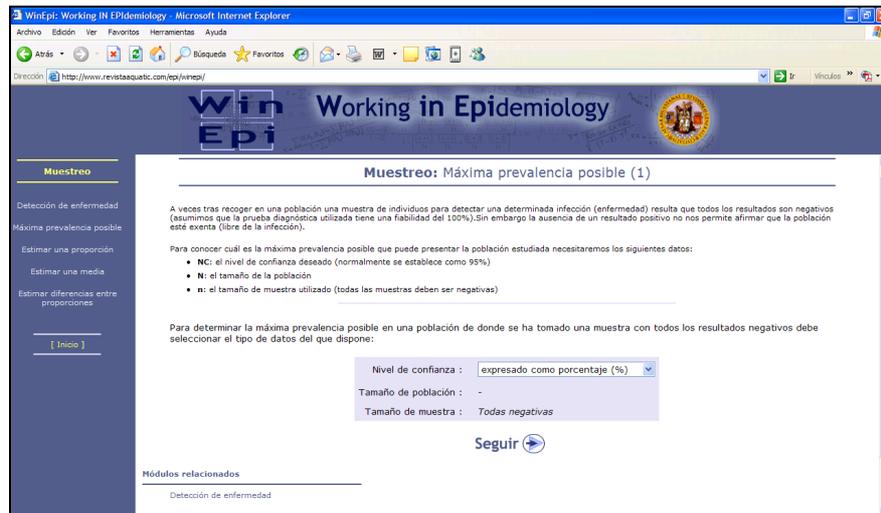


Figure 1 Screen view of data format on step 1 on WinEpi (Spanish version)

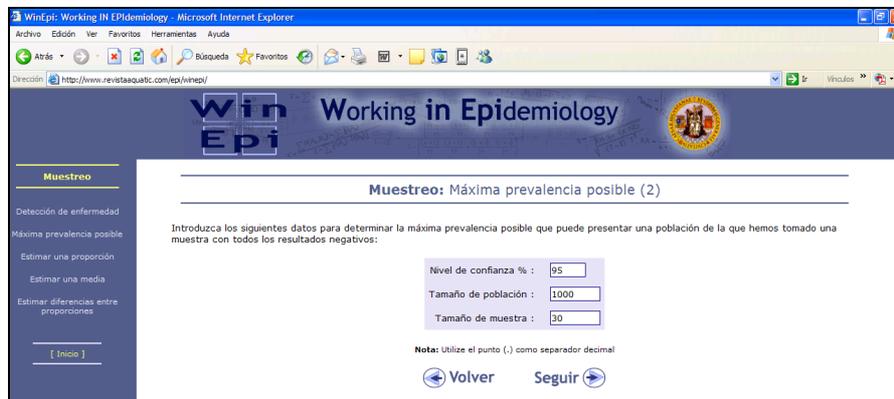


Figure 2 Screen view of data on step 2 on WinEpi (Spanish version)

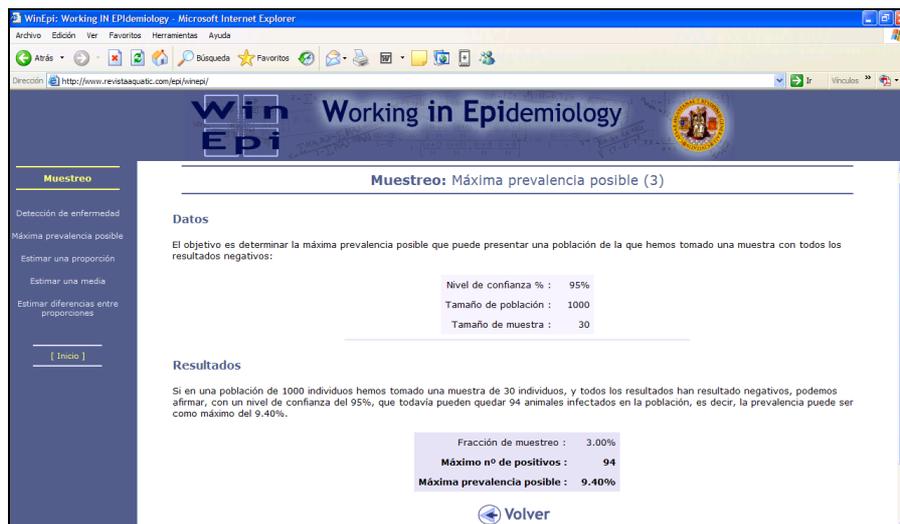


Figure 3 Screen view of results on step 3 on WinEpi (Spanish version)

The modules already programmed are: sample size calculation (detection of disease, maximum possible prevalence, estimation of proportion, estimation of mean and estimation of differences between proportions), diagnostic evaluation (test agreement, test evaluation, estimation of predictive values and combination of test), disease measurements (calculation of mortality/case

fatality rate, calculation of prevalence, calculation of incidences, estimation of disease duration, estimation of incidences, calculation of epidemic index and standardization of rates), risk estimation (observational studies and stratified observational studies, including cross-sectional, case-control and cohorts) and basic statistics (weighted means, chi-square test and differences between proportions).

The evaluation of this beta version has been carried out by students and lectures of second degree in Faculty of Veterinary of University of Zaragoza, and it has been used during practical sessions of the Epidemiology.

## Stage two of WinEpi project

Future development of WinEpi project will try to strengthen the learning ability with step-by-step guidelines and solved examples, both English and Spanish. Currently different formulae have already been included in order to evaluate diagnostic tests, to calculate sample size, to measure the disease frequency, to estimate risk factors in observational studies and also some additional tools for basic statistical calculations. But in the future the system will be open to receive suggestions of new additions to the project.

In order to provide a collaborative application, the website will include a system with multi-level access, with different categories:

1. unregistered users: they only will have access to released versions, and any technical support will be provided.
2. registered users: furthermore of access to modules, the registration will give additional advantages to users, in order to receive information about updates and upgrades, detected errors, configuration of preferences and so on. Access to different modules will be registered to be used with statistical purposes.
3. contributors: registered users that wish to participate in the project will receive special access to area of cooperative work, where different task will be possible, some as contributors to the project (as suggestion of new tools, evaluation of beta versions, translation of text...) and others as authors of the project (proposal of new tools with formulae and explanation and examples for different modules). Of course, copyright of all material belongs to authors that share them with the community.
4. moderators: in order to schedule tasks and coordinate works, a steering committee will be set up.

For the moment no funds are available for implementation of this stage, but we hope to release this stage at the end of year 2006, in the same URL where the project is now available.

In conclusion the only requirements to use WinEpi will be a previous registration (for statistical use only) and availability of Internet access. Everybody can submit proposal to implement new formulae, suggest examples and collaborate as beta-testers or translators.

## References

- Ortega, C., de Blas, I., Simón, M.C., Gironés, O., García, J., Alonso, J.L., Muzquiz, J.L. and Ruiz, I. (2000) Programa informático aplicado al estudio temporal de procesos patológicos en poblaciones animales. *Revue Scientifique et Technique. Office International des Epizooties*, 19(3), 735-743
- Thrusfield, M., Ortega, C., de Blas, I., Noordhuizen, J.P. and Frankena, K. (2001). Win Episcop 2.0: improved epidemiological software for veterinary medicine. *The Veterinary Record*, 148, 567-572.