Introduction to MIAMOD/PIAMOD software

Methods and instruments for estimating

cancer incidence and prevalence

from population-based Registries' data

October 19-21, 2005

Istituto Superiore di Sanità
Viale Regina Elena, 299, Rome ITALY

19 Oct , morning session

Estimates of cancer morbidity: the MIAMOD/PIAMOD method and software

9,00 **Introduction** (*A. Verdecchia)*
Welcome to participants. Motivation, aims and structure of the course

9,15 **Population-based estimates of cancer burden** (*A. Verdecchia*)
Definition and use of cancer estimates. Overview of the existing methods: direct methods (Cancer Registries data) and indirect methods (incidence-mortality ratio, transition rate methods: MIAMOD/PIAMOD).

9,45 **MIAMOD/PIAMOD overview** *(R. Capocaccia)*

1. Transition Rate method and equations relating morbidity and mortality probabilities for chronic diseases. MIAMOD and PIAMOD solutions of the equations.
2. Modeling cancer incidence with age-period-cohort (APC) models
3. Modeling/extrapolating cancer survival by:
    a. using CR data (tabulated survival)
    b. modeling CR data with cure-models (model-based survival)
4. PIAMOD: Incidence data are available. Regression on CR data (forward-calculation)
5. MIAMOD: Incidence data are not available. Regression on mortality data (back-calculation)
6. Time projections
7. Goodness of fit evaluation: regression diagnostics and step-wise regression
8. Validation of the results. Comparison with external independent data. Sensitivity analysis
9. MIAMOD/PIAMOD applications and potentialities: time projections, national/regional estimates, validation of CR data

11,15 *Coffee break*

11,45 **Overview of the MIAMOD/PIAMOD software and output files** *(R. De Angelis)*

1. Overview of the software interface: sessions, tab-windows, flow to run a session, graphical tools to plot input/output data
2. Input data : population, mortality, incidence, relative survival
3. Execution options: single/multiple models, projections, standardization
4. Outcome options: default and optional files
5. Running MIAMOD/PIAMOD
6. Output files description

13,00 *Lunch*

19 Oct , afternoon session

14,00 **Using the MIAMOD/PIAMOD software: guided exercises** *(R. De Angelis)*

1. Example applications including all steps of a complete analysis:
    a. Planning the application
    b. Providing and exploring input data
    c. Regression strategy: step-wise procedures and choice of the optimal incidence model
    d. Fit evaluation
    e. Validating and analysing results

15,00 **Exercises by groups: MIAMOD/PIAMOD applications using tabulated survival**

16,15 *Coffee break*

16,30 **Optional outputs** (*A. Verdecchia*)
Cumulative risks by birth cohort, incidence age profiles, life tables

20 Oct , morning session

Cancer survival modelling for MIAMOD/PIAMOD applications

9, 00 **Model-based relative survival for MIAMOD/PIAMOD applications** *(S. Francisci)*

1. Role of survival data in MIAMOD/PIAMOD estimates
2. Advantages of using model-based relative survival
3. Modelling relative survival with mixture models with ‘cure’
4. Survival models supported by MIAMOD/PIAMOD
5. Programs for modelling grouped survival data with mixture models with ‘cure’ (*SAS routines*)
6. Using model-based survival data in MIAMOD/PIAMOD software

10,30 *Coffee break*

11,00 **Exercises by groups: MIAMOD/PIAMOD applications using model-based survival**

12,30 **Summary of the results of the exercise sessions** (*A. Verdecchia*)

1. Comparing MIAMOD and PIAMOD estimates

2. Tabulated versus model-based survival

13,00 Lunch

20 Oct , afternoon session

Estimating regional cancer burden from local Cancer Registries' data

14,00 **Introduction to the combined use of PIAMOD/MIAMOD to derive regional estimates**
1. validating survival local estimates (PIAMOD)
2. using validated survival to estimate incidence and prevalence at the regional scale (MIAMOD)

14,30 **Exercises by groups**

16,00 *Coffee break*

16,15 Summary of the results and discussion

21 Oct, morning session

The application of MIAMOD/PIAMOD methods: final discussion and conclusions

9,00 **Application experiences**
1. Regional estimates in Italy *(R. Inghelman, E. Grande)*
2. Breast cancer estimates by state in US (*A. Tavilla*)
3. Comparison of statistical models for Forecasting the Future Burden of Cancer: applications to Ontario Cancer Registry data *(M. Thériault, E. Holowaty*)

10,15 *Coffe break*

10,45 **Critical discussion** of methodological assumptions, limits of application. Future improvements of the method and software *(A. Verdecchia)*

11,30 General discussion

12,30 Closing remarks