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**Behavioural
RiskFactor
Surveillance**

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Invited speakers
Contributed presentations
Poster presentations



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Health inequalities, social determinants, and surveillance

This presentation will seek to answer five questions:
What are inequalities and social determinants in public health?
Why do they matter?

What are the challenges in addressing these issues?

What is being covered or should be covered in surveillance systems?

What does the future hold regarding surveillance for these issues?

It begins by defining social determinants of health as the economic and social conditions that influence the health of individuals, communities, and jurisdictions as a whole. A wide range of variables may be included such as: the social gradient, stress, social exclusion/poverty, unemployment, social support, addiction, food, transport, and gender. In addition, social epidemiology is the branch of epidemiology that studies the social distribution and social determinants of states of health. And social changes and social movements seek collective action for societal change, while often changing political structures. The presentation will present challenges for surveillance to answer the following questions:

Do we adequately understand the social causes/evidence base?

Should we measure the causes vs. readiness for a social movement?

Does any of this lead to effective interventions and improvement in population health?

In answering these questions, examples will be drawn from the US Behavioral Risk Factors Surveillance System and the WHO Health for All data set. A short case study will be presented that focuses on housing. It is known that the spatial concentration of poverty has been shown to have an adverse effect on a range of life experiences, from isolating families from employment opportunities to limiting youth to inferior education, dangerous neighborhood conditions, and harmful environmental conditions. To affect these issues adequate housing may have a direct or indirect impact on several health indicators.

The presentation will conclude with future issues of importance, including the need to:

Continue to develop the evidence base on social determinants and interventions

Further refine issues for surveillance

Foster international collaboration.

Ross C. Brownson
University of St. Louis, USA

Policy and Intervention Development for Chronic Disease Prevention: The Role of Surveillance

Conventional (public health) wisdom suggests that health data and information would contribute to improved definition of the extent and distribution of health problems, thereby improving the design and targeting of health policies and interventions. Furthermore, having continuous surveillance would contribute to improved monitoring and evaluation of programs and policies. There are well-known social and technical barriers to making this dream a reality. The problems of availability and timely reporting of relevant data is well understood, as seen in health promotion capacity mapping in countries in the Western Pacific Region, along with the gap that exists between data analysts and decision-makers. A consideration of what policy-makers and program designers want may be helpful for the next stage of development in the information base for chronic disease prevention, as well as for knowledge translation mechanisms. The development of the evaluation framework for the Australian Better Health Initiative points to the range of surveillance systems needed, along with other informational requirements, that relate to the nature of policy questions, the culture of decision-makers, and the mindsets about data and information. The strengthening of the evidential basis for policy and program development is likely to need further consideration about democratisation of surveillance systems, as well as leadership in advocacy.

Vivian Lin

La Trobe University, Australia

The burden of chronic disease and the need for evidence

This presentation will briefly review the increasing and serious burden that chronic disease presents in the global picture. Most remarkable is the increase in this burden in developing countries. Nonetheless in the more economically developed countries the chronic disease and health promotion infrastructure to address the challenges of the health care and prevention costs is generally poorly developed. Even the most developed countries often lack the depth of capacity to deal with the impact and burden of chronic diseases. Population demographics argue that the situation will get worse in the coming years. Nonetheless there seems to be little sense of urgency. The monitoring of risk factors for chronic disease is critical to both an understanding of the changing burden and to the development of a public health infrastructure to provide an evidence base for the analysis of efforts to assess interventions to change the risk factors. In addition there is a key role for surveillance to raise a “sense of urgency.” The challenge for surveillance in this area is how to incorporate the “causes of the causes” of chronic disease, the so-called social-cultural determinants area. This area takes more traditional risk factor surveillance approaches to another dimension of complexity and presents exciting and difficult aspects for those in surveillance. The importance of keeping this in focus will be discussed.

David McQueen

Centers for Disease Control and Prevention (CDC), USA

Surveillance in practice: evidence and effectiveness

Continual epidemiological assessment using representative population risk factor surveillance systems can deliver evidence-based information needed by health policy makers, health planners and health promoters to make appropriate, timely and efficient evidence-based decisions. This presentation will highlight how risk factor surveillance systems can provide evidence for better health outcomes. Chronic disease and risk factor health surveys and surveillance systems developed in South Australia will be used as the example. These surveillance systems have progressed chronic disease and risk factor data collection from ad-hoc population surveys to timely, relevant systems with improved access, use and application of data-driven evidence. Well-informed policy decisions, modification of risk factors associated with chronic diseases, increased emphasis on promotion of good health practices, appropriate targeting of health promotion campaigns (including an understanding of who is at risk and why and how interventions can be undertaken), and early detection of the conditions are all reliant on evidence. Surveillance is also essential for the development of efficient and effective public health services. The examples used in the presentation will highlight: trends associated with BMI over 16 years; the monitoring of the impact of a nutritional campaign in which the consumption of fruit and vegetables was assessed pre and post a major social marketing campaign; physical activity levels across major socio-economic groups; and demonstrate the ability of surveillance system data to be mapped by meaningful geographic boundaries. A major benefit of surveillance data is the ability to analyse by both time and place. Accumulation of data enables analyses by special population groups, not normally surveyed in a cost effective manner (eg indigenous groups, people who care for ill family members over a long period of time), or by chronic disease group (eg arthritis, cardiovascular disease). Often these groups bemoan the lack of large-scale population-wide information for policy, targeting and planning of campaigns. Without powerful scientifically collected data, priority groups often lack a leverage for meaningful debate on these issue when funding allocation and health priorities are addressed. In addition, it is only at the population level that evaluation of the effectiveness of health promotion preventive programs and policy interventions can be assessed to make sure they are addressing all groups within the population. Effectiveness of a sur-

veillance system is measured by the amount and frequency of how the information is used and by the eventual health outcomes of the population. The collection of population health data via surveillance systems is an expensive exercise if data collections are inadequately or improperly analysed and disseminated. By the very definition of a surveillance system, transfer of data into information is mandatory. The lack of an integrated reporting process is a weakness of many surveillance systems, as is lack of timeliness, and often data are collected and analysed only superficially. An effective surveillance system is one that produces quality, timely, data-driven evidence through rigorous collection of self-reported data.

Anne Taylor

PROS, Department of Health
South Australia, Australia

Assessing validity of surveys across data collection modes

Valid and reliable public health data are becoming more difficult to obtain through surveys, especially random-digit dial (RDD) telephone surveys. As a result, researchers are evaluating different strategies and survey designs (i.e., sampling frame and survey mode combinations) as complements or alternatives to RDD. These include the use of cellular telephones, mail, web, RDD, and some of these in combination. Traditionally, mail surveys of the general public have been limited by lack of a complete sampling frame of households. More recently, however, advances in electronic record keeping have allowed researchers to develop and sample from a frame of addresses (the U.S. Postal Service Delivery Sequence File), which appears to provide coverage which rivals that obtained through RDD sampling methods. Testing these potential modes for surveying adults aged 18 years and older, was conducted as part of several pilots using the Behavioral Risk Factor Surveillance System (BRFSS). We discuss the details of these procedures and demonstrate how inclusion of other surveillance modes can help to improve the representativeness of the overall sample and reduce potential bias in the survey estimates.

Ali Mokdad

Centers for Disease Control and Prevention (CDC), USA

Surveillance in developing countries: the WHO-STEPS Experience

Four out of five chronic disease deaths occur in low and middle income countries. A large fraction of these deaths could be prevented if the major underlying risk factors were eliminated. In spite of these facts, surveillance of chronic disease risk factors in low and middle income countries has been neglected in the past. The WHO STEPwise approach to chronic disease risk factor surveillance provides an entry point for low and middle income countries to get started on chronic disease surveillance activities. It is designed to help countries build and strengthen their capacity to conduct surveillance within the framework of an integrated, systematic approach aimed at a sustainable collection of data. The WHO STEPwise approach to chronic disease risk factor surveillance is based on the concept that surveillance systems require standardized data collection, as well as sufficient flexibility, in order to be appropriate in a variety of country situations and settings. The key feature of the STEPS framework is the distinction between different levels of risk factor assessment. Self-reported information is collected by questionnaire (step 1: demographic information, information on tobacco use, alcohol consumption, diet, and physical activity), blood pressure and anthropometric information are obtained by physical measurements (step 2), and information on blood sugar and blood lipids is obtained by biochemical analyses. Within each step, core, expanded, and optional information can be collected. At minimum, core information provides the basic, comparable variables to describe prevalence and trends in the most common risk factors. Expanded modules provide more detailed information, and optional modules can be added to provide data not included in the standard STEPS approach. WHO Geneva, in collaboration with the WHO regional offices, provides STEPS training to STEPS focal points through regional and country workshops, as well as through on-going technical advice and support. The WHO STEPwise approach to STEPS training is a “train the trainer” approach, which ensures that knowledge and capacity is improved and maintained within the region and country. Training covers all aspects of the planning, implementation, data collection, analysis, and dissemination of the results of a STEPS survey in the context of an integrated surveillance system. Currently, 104 countries worldwide are involved in the

WHO STEPwise approach to chronic disease risk factor surveillance out of which 47 have completed their first round of surveys (15 countries from the African region, 2 from the Region of the America's, 8 Eastern Mediterranean countries, 9 South East Asian countries, 13 Western Pacific countries). Country experiences show that the STEPS approach is, due to it's flexibility and low cost, feasible in a wide variety of settings.

Regina Guthold
WHO, Europe

Mental Health: Facing New Surveillance Needs

Our appreciation for surveillance needs is influenced by changes in the public's health and advances in our understanding of health as a biopsychosocial system. Just as the early concentration in surveillance expanded from infectious diseases to include non-communicable diseases, then to behavioural risk factors, surveillance now needs to expand to encompass macro-level factors, social factors, intra-personal factors, and not only physical, but also social and mental functioning. Not all of the factors in the causal web can or should be taken under surveillance. The breadth of potential factors for inclusion will always be beyond our skill and resources. We therefore need to pick and choose with restraint and care the key modifiable factors to be added to tomorrow's surveillance systems. With advances in knowledge, many factors that once were non-modifiable come to be modifiable, and factors that were once beyond the territory of public health become public health's business. Advances in genetics, and appreciation of the social determinants of health are example of knowledge development that drive change in surveillance practice. As we follow advances in knowledge, expanding and modifying surveillance is essentially an unending task. Two of the priorities for expanded surveillance are mental disorders and mental health. These are now understood to be more than flip sides of the same coin. Mental disorders are today defined by medical diagnoses, and risk for mental disorders can be assessed in the general population with screening instruments that are suitable for large scale surveys. Indeed in the few instances where mental factors are included in surveillance, they almost always are measures of risk for mental disorders, or are diagnostic data. Mental health is understood to be fundamentally distinctive from the mere absence of mental disorder. A common synonym for mental health is well-being. Most modern definitions of mental health equate it to well-functioning cognitive and emotional processes, positive feelings about oneself and one's life, and how these intra-personal resources help one cope with the strains of life, including disease, injury and frailty. Those that cope well are resources to themselves and to others and enjoy better health measured in many ways. Those that cope poorly are a burden to themselves and to others, and poor mental health puts them at risk for a host of other health problems. Poor mental health is a precursor to many types of health-threatening behaviour. Poor social support is known

to increase psychological distress which in turn is known to increase risk of cardiovascular diseases and suppress immune function. The mind-body distinction is becoming less relevant as knowledge advances. Overall, the burden of morbidity, mortality and disability due to mental disorder is estimated to account for 10 percent of disability adjusted life years worldwide, about the same as for cardiac conditions and twice the level for HIV/AIDS. Mental disorders and mental health are thus significant public health matters, as well as intensely personal matters but relevant indicators are not yet included in national surveillance systems (with very few exceptions). This presentation will review some of the surveillance systems that do include mental disorder indicators, and examine some large scale survey research efforts that could inform changes in surveillance systems to include a modest but useful range of mental health indicators.

Maurice Mittlemark

University of Bergen, Norway

Past, present and future of NCD- PH and surveillance (Behind the fifth conference)

This presentation focuses on the need to develop political, management, and technical strategies to increase the performance and sustainability of the surveillance systems. The past and present limitations to achieve the surveillance systems objectives are nowadays well known, however the actions that have had success to solve it are limited; therefore some problems have broken out again and others have emerged. The boarding of this topic includes conceptual, political, technical, ethical and financial aspects which interact within each other causing synergies that influence the surveillance practice and the use of its results. For instance it refers to the influence which, in the practice, the concepts have over the risk factors surveillance. The accepted definition of surveillance makes us believe that its principal objective and therefore emphasis as well, is the data production that give an account of the presence and distribution of the study events, instead of producing information to modify those events. The difference between both prior emphasis, is that the surveillance over being a goal is also a mean to formulate politics and programs to prevent and control health problems and create favorable health conditions. In this sense the question to be asked is: What is the information that has to be produced and what are the negotiations that have to be done to achieve this objective? The surveillance scope as a method, process and strategy of public health are analyzed and concrete examples are offered of the differences of these focuses in the practice. The author justifies why the surveillance systems have to be seen as a Public Health Strategy, signifying with it the application of methods, processes and abilities of negotiation with the purpose of: position the surveillance in the political agenda; use the results of the surveillance to control and prevent the supervised events; create conditions that promote health; and the systems sustainable. In relation to the type of information required to make decisions, cases come up in which other sources of information are articulated to the results of surveillance to, in addition to prevalence's and tendencies of the risk factors, point out the influence that the economical and social conditions exert in a differential manner in accordance with the distribution of these determinants in the population. This way the decision maker has the capacity not only to know

and quantify the problem but also to understand it characterizing the context in which the events are produced and therefore the context that has to interfere to change them, as well as the resources available to do it. Finally, through recent examples we show five successful actions to achieve positioning the surveillance conceived as strategy in public health, in the public agenda and to make it sustainable:

Information production to identify, quantify and understand the context in which the risk factors are produced.

Articulation of the results of surveillance systems to other public health functions: planning and evaluation of politics and programs in SP.

Responding to countries particularities: documenting and adjusting the system in a participative process of successive approximations (sensitive and flexible)

Incorporating the surveillance system to health management, not as vertical program, (sharing resources and structures)

Negotiation to use surveillance results: It is an intermediate goal (information production) tied to a major goal (actions to reduce presentable diseases NCD)

Ligia De Salazar

University of Valle, Columbia

Noncommunicable Disease Risk Factor Surveillance in India: Leveraging Research to National Action

The burden of Noncommunicable Diseases (NCDs) and their risk factors in India is high enough to warrant institution of immediate preventive and control measures. Recognizing the lack of a National NCD surveillance system in the country, the Indian Council of Medical Research (ICMR) planned and coordinated a six site pilot study, from 2003-2006, which provided the experience for developing a national strategy for the country. The ICMR has been identified by the Ministry of Health and Family Welfare, Govt. of India as the nodal agency to implement the NCD risk factor surveys under the World Bank supported National Integrated Disease Surveillance Project (IDSP) in 29 States and Union Territories in 3 phases between 2007-2009. Thereafter, the States will repeat these surveys every 3 yearly through their own resources. A representative sampling design will obtain State level prevalence of tobacco, alcohol, fruits, vegetable consumption, physical activity, blood pressure and body mass index. Men and women aged 15-64 years residing in urban and rural areas will be included in the survey. The survey implementation is underway through a network of reputed institutions. Over a 3 year period we have demonstrated research being successfully translated to a national action plan. This surveillance activity will generate trends of selected NCD risk factors over time and, provide useful inputs to the proposed National Program on Prevention and Control of Cardiovascular Diseases, Diabetes and Stroke for instituting appropriate interventions.

**Prashant Mathur,
DK Shukla,
Geetha R Menon,
Bela Shah**

National experience in NCD behavioral risk factor surveillance

Mortality data from the Pakistan's Federal Bureau of statistics show that 54% of the mortality can be attributed to non-communicable diseases (NCDs). To address this, the partnership led by the NGO Heartfile and including the Ministry of Health and WHO is implementing the first phase of the National Action Plan on NCDs; establishing a surveillance system for NCDs is part of this and includes integrating NCDs into the existing facility based data systems, strengthening registry based surveillance of cancers and stroke, improving the cause of death system and the setting up of a population based risk factor surveillance system. The first round of the latter has been completed in one district of the country (total population 3.4 million) on a population weighted sample using a two-staged stratified sample design. Face-to-face interviews were conducted with the help of a structured and validated questionnaire seeking guidance from the BRFSS and WHO Steps modules. Results showed that mean age of the respondents was 39(\pm 11) years; 32.7% of the respondents were illiterate and mean income was US \$ 109. Results showed high prevalence of adverse risk behaviors coupled with low level of knowledge about NCD risk factors. 41% men and 6.9% women used tobacco, more than 20% of the population was overweight, more than 90% was physically inactive in the leisure domain and 24.3% of the population over the age of 18 years had high blood pressure according to the JNC 7 criteria. As opposed to this, a significant proportion of the population had *incorrect* knowledge about risks for NCD in the following domains: knowledge of heart attack 94.8%; causes of heart attack 78.7%; healthy diet 73.8%; effects of smoking on health 76.3%; effects of obesity 77.4%; effects of childhood obesity 93.4%; effects of untreated diabetes 85.9%; causes of cancer 72.7%. This pattern calls for aggressive policy interventions to scale up locally suited behavior change interventions.

Sania Nishtar

CINDI population strategies and prevalences of noncommunicable diseases risk factors in Slovakia 1993 – 2003

Introduction: Slovakia applied in 1992 for membership in the WHO CINDI network to influence an unfavourable morbidity and mortality of cardiovascular and cancer diseases. This started intervention activities aimed to prevalence decrease of noncommunicable diseases risk factors. Efficacy of interventions was measured by cross-sectional surveys on prevalence of the risk factors, mainly smoking, increased total cholesterol, increased blood pressure, overweight and obesity. **Methods:** Interventions were performed on individual, group, and population levels via 38 Health Promotion Centers established as parts of national and regional Authorities of Public Health. Cross-sectional surveys were performed on representative samples from model areas populations in 5 year intervals (1993, 1998, 2003) using standardized methods of examinations and data collection by the CINDI protocol. **Results:** In the surveys during 1993-2003, there were observed significant decreases of smoking prevalences in 9% in men, and 4% in women. Mean values of total cholesterol significantly decreased in 8.2% in men, and 9.7% in women. Mean values of SBP increased in 1.5% in men, and decreased in 2.2% in women. Similarly mean values of BMI increased in 1.8% in men, and decreased in 1.1% in women. **Conclusions:** In Slovak population, a significant decrease of risk connected with noncommunicable diseases was observed during studied years. Decrease in smoking prevalence was reached through interventions on prevention and stop smoking, and also through participation in international campaigns. Decrease in values of TCH was reached through interventions on healthy nutrition, namely on fats contents. However these interventions did not influence BMI values, nor prevalence of overweight and obesity. Therefore nutrition interventions were strengthened starting 2003, also on total energy income, balance between energy income and use, and on other nutrition components, mainly sacharides. Also, since 2003 a campaign to increase physical activity was performed every year. Problem of the elevated blood pressure and hypertension will require a complex solution in cooperation of intervention, primary prevention and treatment.

**Mária Avdičová Františka
Hruba**

The Italian Behavioural Risk Factor Surveillance System (PASSI): an account of the first year of activity

Noncommunicable chronic diseases contribute significantly to the burden of disease in European countries and have major economic impact. Lifestyle plays an important role in their development. In 2006, following two years of cross-sectional pilot surveys, the Italian Ministry of Health funded the Italian National Health Institute (ISS) to develop ongoing surveillance of behavioural risk factors and preventive measures such as cancer screening included in the National Prevention Plan. All 21 Italian regions agreed to participate. PASSI is centred on the 180 local health units (ASL), which are National Health System administrative divisions. Names of ASL residents 18-69 years are randomly selected, and a telephone interview is administered by specially trained local health personnel to 25 persons/month/ASL using either paper or CATI questionnaires. Records are uploaded into a common national information system, designed to ensure quality control, data analysis, process monitoring and appropriate and timely presentation of results designed to assist in local public health choices. Continuous data collection and availability of details at local (ASL and regional) level are important system characteristics. By 6/2007, 13 Regions had begun data collection, and by 6/2008 45.000 interviews are anticipated at national level; preliminary regional results will be available within 6 months, local results in 12. To promote professional development of local and regional staff, training activities are ongoing. Communications activities emphasize the system's usefulness and promote cooperation and appropriate use of the results. A web site (<http://www.epicentro.iss.it/passi/>) offers news, documentation and other services for the network and the public health community.

**Sandro Baldissera,
Nicoletta Bertozzi,
Stefano Campostrini,
Giuliano Carrozzi,
Angelo D'Argenzio,
Barbara De Mei,
Pirous Fateh-Moghadam,
Gabriele Fontana,
Stefano Menna,
Valentina Minareti,
Giada Minelli,
Valentina Possenti,
Massimo O. Trinito,
Stefania Vasselli,
Alberto Perra,
Nancy Binkin,
Stefania Salmaso**

Using the BRFSS data to prioritize public health resources

Prioritizing public health resources is a necessary step in the planning of public health programs. The Behavioral Risk Factors Surveillance System (BRFSS) is available in all states in the United States (US). A prioritization model is described that uses data from the Missouri state BRFSS in 2000, and epidemiological measures to construct six priority criteria: size (the prevalence of a risk factor), severity (population-based risk for highest mortality disease attributed to the risk factor), urgency (annual percent change in prevalence of risk factor), preventability (evidence-based score on intervention to reduce risk factor), community support (score of social support for preventive action) and racial-disparity (race comparison through prevalence rate ratio). A measure value is weighted to indicate its importance: 0.5 for low; 1.0, average; and 2.0, high. In a comparison of the top priority chronic conditions between the Missouri Department of Health budget and the Priority BRFSS model (all criteria used), the rank order of conditions differed significantly between methods and the Priority BRFSS model identified two additional conditions. This prioritization model is available in Priority MICA, one of the web based interactive tools that makes available data from a wide variety of surveillance systems (www.dhss.mo.gov/MICA). This model can be used by departments of health with behavioral risk factor surveillance data to distribute resources across prevention strategies aiming at reducing risk factors for chronic diseases and conditions.

**Eduardo J. Simoes,
Ali Mokdad**

Use of a monitoring and surveillance system as part of a mixed mode design to assess nutrition intake in South Australia

The South Australian Monitoring and Surveillance System (SAMSS) has been in operation since July 2002. Approximately 600 interviews are conducted each month, by telephone, of a random representative sample of the South Australian population of all ages. While SAMSS can monitor chronic conditions, risk factors and other health priority areas over time, in Australia other information is lacking at a population level. One area in particular is nutrition. As a result SAMSS has been used as part of a mixed mode design, to not only assess high level indicators relating to nutrition but more specific food intakes. Over two months, in 2006, respondents to SAMSS aged 18 years and over were asked to complete a food frequency questionnaire. Respondents were also asked if they were prepared to have the food frequency data linked to the relevant variables from SAMSS. This presentation highlights the both the pros and cons of an ongoing surveillance system and a point in time survey and also some of the issues surrounding the used of mixed mode methodologies. By linking data from the two surveys, differences in the values of body mass index and the daily consumption of fruit and vegetables can be determined, in addition to the food frequency questionnaire providing more detailed consumption of food types, which can be compared to other data obtained as part of the monitoring system. This study highlights an alternative use of a monitoring system in order to obtain more in-depth information on a specific public health issue.

**Lynne Cobiac, Anne Taylor,
Tiffany Gill**

Towards Behavioural Risk Factor Surveillance System: Georgian Experience

Chronic non-communicable diseases (NCD) linked by common risk factors are a main cause of premature mortality and the overall disease burden in Georgia. 73.7% of the disease burden (more than European average), as measured by Disability Adjusted Life Years (DALYs), is accounted by seven leading risk factors: high blood pressure (23.5%); high blood cholesterol (11.9%); overweight (11.9%); tobacco (9.2%); low fruit and vegetable intake (5.8%); alcohol (5.8%) and physical inactivity (5.6%). So, the improvement of individual risk profile by affecting biological risk factors (hypertension, abnormalities in lipid and overweight) ranking first three leading for total deaths and DALYs in the country as well behavioural risk factors ranking next four is essential for reducing of NCD burden. Developing of Risk Factor Surveillance System was defined as one of main priorities for implementation of new European Strategy on NCD prevention and in accordance of this the Risk Factor Survey was conducted and finished recently. The methodology has been used is based on the experience of the CINDI Health Monitor Surveys in 2001 and 2004, assessing the process of implementation of the surveys and to study feasibility, rapid survey for evaluation of the prevalence of arterial hypertension. There are high prevalence of risk factors. For example, almost half of the population aged from 25 to 64 is overweight, 13% are obese. Although positive trends of nutritional behavior changes also have been seen (number of eating less fat increased from 14 to 26%, more vegetables from 12 to 32%, less sugar from 11 to 21%, less salt from 9 to 21%, drink less alcohol from 7 to 26%). It seems reasonable to put Risk Factor Surveillance System in the state-based health information systems.

**R. Tataradze, L. Baramidze,
V. Barbakadze, K. Liluashvili,
L. Sturua, D. Trapaidze**

The Nairobi Urbani Health and Demographic Surveillance System (NUHDSS): platform for monitoring health outcomes Behavioural Risk Factor Surveillance

The rapid and uncontrolled growth of African cities has forced the poor to live in informal settlements characterized by unsafe water supply, poor sanitation, high drug and alcohol abuse and risky sexual behaviours. Approximately 60% of people in Nairobi Kenya live within such environment. This exposes these inhabitants to health risks which need to be monitored as well as demographic outcomes and impacts resulting from intervention programs. The NUHDSS implemented by the African Population and Health Research Center (APHRC) which started in year 2000, covers two slums with about 60,000 people living in 22,000 households (APHRC 2002). It offers rich longitudinal data characterised by tri-annual follow-ups which reflects the date of occurrence for most events. Under this platform various studies have been launched. This is the case with HIV serological survey, studies on malaria, poverty and health dynamics. The system has also supported maternal health assessment, monitoring of intervention programs meant to reduce infant and child mortality rates and launching comprehensive care projects for people living with AIDS. With the availability of up-to-date information about population, the system can conveniently support launching of studies on behavioural risk factors linked to other chronic diseases. Such initiatives would easily be extended to other DSS sites in Africa and Asia under the INDEPTH network.

**James Ciera,
Catherine Kyobutungi,
Ken Otsola Eliya Zulu**

The ongoing monitoring and surveillance of chronic disease and risk factors in South Australia

The South Australian Monitoring and Surveillance System (SAMSS) has been in operation since July 2002. Approximately 600 interviews are conducted each month, by telephone, of a random representative sample of the South Australian population of all ages. Chronic conditions, risk factors and other health priority areas are examined. Demographic information is also collected. Uses of SAMSS include monitoring the prevalence of chronic conditions at both a point in time and over time. However, while for some chronic conditions, the prevalence may not be changing rapidly over a period of time, when examined in relation to other data items such as income, work status, age or sex differences in trends are observed. This presentation discusses the prevalence of chronic conditions and risk factors and highlights differences that become evident when data are examined in different ways and using different subpopulations. Examples will highlight the importance of aspects of a surveillance system, in particular the interpretation and dissemination of results, and translation of information into action.

Tiffany Gill, Anne Taylor

Application of the RE-AIM model in the social marketing of surveillance information products

Public health surveillance activities result in the collection and analysis of data that lead to the creation and dissemination of information products to the end users, a fact that is critical in behavioural change, preventing disease and improving health. Typically, the end users of information products are public health researchers, practitioners, clinicians, professionals and policy makers, and the general public. The complexity of this information often precludes the general audiences from availing themselves of this information. Therefore, it is essential to develop information products that are accessible and readily understood by different types of audiences. Uptake would require social marketing that would motivate various target audiences to utilize the information. In other words, the importance of surveillance is not simply in its information, but as part of intervention, going from “knowing to doing”. RE-AIM is a systematic way of evaluating health behaviour interventions. The RE-AIM model outlines 5 steps that are relevant to public health surveillance systems:

Reach the target population

Efficacy or effectiveness

Adoption by target population

Implementation—consistency of delivery of intervention

Maintenance of intervention effects in target populations over time.

RE-AIM can be used to estimate the impact of surveillance information products on public health. In this paper, the authors will demonstrate that the components RE-AIM are applicable to surveillance: Reach: Is the surveillance data reaching and easily accessible for the target population? Efficacy: Is the appropriate surveillance data reaching the target population in a timely way? Adoption: Is the surveillance data being adopted by the target audience to take action and make changes? Implementation: Is the surveillance data being used to implement programs or interventions? Maintenance: Can the information uptake and actions be maintained over time?

**Daniela Guccione,
Bernard CK Choi**

The Introduction of Daylight Saving in Western Australia: Analytical Approaches using Surveillance Data

Daylight saving was unexpectedly introduced into Western Australia on December 1, 2006. A variety of potential impacts were envisaged, including a positive impact on health through the anticipated increase in physical activity. A module of questions related to time and place of physical activity was added to the WA Health and Wellbeing Surveillance System (HWSS) in December 2006. These questions were the same as a set of questions that had been collected in October in another point in time survey before daylight saving began. In addition the HWSS has been collecting information on physical activity continually since 2002. In addition to purely descriptive analytical approaches, two potentially appropriate inferential methods to the analysis of these data were considered, time series analysis and log linear modeling. Preliminary results suggest that there has been some impact. Results concerning the significance and magnitude of the impact will be reported.

**Alison Daly, Michael Phillips,
Stefano Campostrini,
Michael Rosenberg**

Theorising Behavioural Risk Factor surveillance

Drawing on post structural thought as a framework for this paper, the purpose is to theorise how it is possible to talk about Behavioural Risk Factor surveillance and to elaborate implications that emerge for practice. To obtain information about behaviours that lead to the development of chronic diseases requires of individuals a capacity to be self-analytical and to be so in a way that makes monitoring and measuring the health status and health-related quality of life (HRQOL) of the population meaningful. Like biomedicine, individuals need to objectify their body and behaviours to enable a measurement like that of 'healthy days'. A general principle of post structural thinking is to question how measurements of, for instance, healthy days have come to be considered as appropriate and possible. The focus of the paper will be on implications that emerge where a self-report of healthy days (via HRQOL surveillance measures) is assumed to reflect the views or experiences of 'the author' – that is, the person who gives the self-report. The practice of seeking self-reports of healthy days assumes what the person says (or writes) reflects a reality of healthy days for that person, and that another person is able to interpret this reality from the self-report of healthy days. In bringing forward this discussion is not to discount the possibility of Behavioural Risk Factor surveillance. Rather, the purpose is to ensure the best possible Behavioural Risk Factor surveillance is implemented.

Kay Price

Surveillance and the arrow of time

*"Time glides by with constant movement, not unlike a stream.
For neither can a stream stay its course, nor can the fleeting hour."*

Ovid, Metamorphoses XV, 180.

From The Arrow of Time A Voyage Through Science to Solve Time's
Greatest Mystery
Peter Coveney & Roger Highfield

The arrow of time is a fundamental characteristic of how the universe operates and as a consequence the fundamental biology of disease processes are time dependent. This is reflected in models of the natural history of disease. The life course of individuals within a population also follows a time dependent sequence. Given the fundamental importance of time's arrow, surveillance is philosophically more attractive than single population based surveys. Time is a continuity and surveillance systems should be designed to reflect that important characteristic rather than a discontinuous series of surveys. There are also serendipitous advantages to continual collection. For example, a continual data collection system can be used to quickly collect information when an important and unexpected event takes place that may affect the health of the population. Three relatively recent examples are murder of prominent public servant in South Australia in 2002, the Twin Towers tragedy in US in September 11, 2003, and the surprise introduction of daylight saving in Western Australia, 1 December 2006. Continual data collection systems provide time related information that can be used to assess the impact of an event, health promotion campaign or the emergence of a new pandemic disease. A surveillance system that reflects time's arrow can assess the magnitude of the impact and the course of the impact over time and nothing else can do that at a population level. Examples will be provided.

**Michael Phillips,
Stefano Campostrini,
Alison Daly, Anne Taylor**

A Methodological Study on Data Collection Methods for the Health Behaviour Surveillance of Singapore (HBSS)

As part of the development of a national health behaviour surveillance system in Singapore, a study was conducted to determine the most suitable method of data collection that would provide good population coverage and response rates at a reasonable cost. In Singapore, relatively little is known about the potential of conducting a national survey over the phone as surveys have typically been conducted through personal interviews. A split run experiment was conducted using a multi-stage stratified probability sample design with a single frame. The sample was randomly selected to receive either the telephone or the face-to-face surveys. A sequential mixed mode design was also included to reach non-respondents. A single mode telephone survey had inadequate coverage while a single mode face-to-face survey yielded response at a higher cost. Mixing data collection modes provided an opportunity to compensate for the weakness of each individual mode. This paper addresses some the methodological challenges faced in a quest to determine an 'optimum' data collection method for the HBSS.

**Chee Yeong Chng,
Alison Prescott, Leonard Yeo**

Behaviour risk factor and chronic disease surveillance systems in the 21 century – meeting the challenge

In the 'now-information' environment it is expected that the latest behaviour risk factor and chronic disease information will always be available for policy makers to make informed decisions and to monitor public health interventions. Although encouraging, that we are now in an evidence-based environment, it is an epidemiological challenge to meet the never-ending information needs. In this 'now-information' environment the processes of collecting, managing and analysing data are often assumed to occur instantaneous. To meet these epidemiological challenges the NSW Health Survey Program has implemented a surveillance system that has a continuous collection, analysis and reporting process that can be used across different surveys, population groups and topic areas to produce reports that include both actual and predicted estimates to meet the immediate and future needs of the users. This system maximises the use of meta-data and seamlessly interacts between different IT platforms and software using SAS as the driver. The system outputs the information as html, pdf, csv and gif files and also produces the final pdf report without the need for desk-topping, which can often impede the production of ongoing timely reports. The planned collection, analysis and reporting of the data, for over 50 different question modules collected over different time periods and for different population groups to 2012, automatically occurs through the use of system drivers. These system drivers have been designed so that new question modules, analysis methods and reporting outputs can easily be incorporated to meet the emerging and changing information needs of users.

**Margo Eyeson-Annan,
Raymond Ferguson,
Michael Giffin,
Matthew Gorringe,
Mazen Kassis, Baohui Yang**

Data to advocate for changes in factors that impact on the emotional health of children: an example from Western Australia Child Health Surveillance Data

This presentation will focus on the use of child health surveillance data to assess the suitability of a Social and Family Functioning theoretical framework developed at the WA Institute for Child Health Research to monitor changes over time in the emotional health status of WA children aged 12 years and under, and of changes in the factors of the framework. The domains of the framework include income, time, human capital (physical health and education level of parents), psychological capital (family cohesiveness and parenting style) and social capital. Data from the WA Department of Health for the period 2001-03 were used to test the framework (except for social capital). Logistic regressions at both univariable and multivariable levels indicated the relative robustness of the framework. The results indicated that flow of income rather than absolute levels, the combination of hours available for one or both parents to spend with their children, the number of hours that the children watch television and others were important factors. The results of these analyses provide substantial information to traditional mental health promotion units for the development of programs aimed at increasing resilience in individual children and their families. These results also provide substantial information to supplement the individual approach with data necessary to advocate for maintenance of existing policies or change in social policy in areas such as family support, taxation, industrial relations, and education across both State and Federal levels of Government. These results also point to the need for continuing support for practical and useful population health surveillance systems across the life-course.

**Edouard Tursan d’Espaignet,
Steve Zubrick**

Behavioural Risk Factor Surveillance Study of children eating habits-the starting point for surveillance to prevent Noncommunicable Chronic Diseases (NCD)

NCD risk factor surveillance is one of the proposed activities for the implementation of the European Strategy for the Prevention and Control of NCD. At the same time it is very difficult to obtain required substantial resources for data collection and maintenance, especially in the low- and lower-middle-income countries where, in addition, the funding from international donors for programs that focus on NCD is quite limited as opposed to the programs for infectious diseases, maternal and peri-natal conditions, and nutritional deficiencies. It seems that it is imperative that advocates for mentioned programs and NCD cooperate in their efforts rather than promote competition for funding. On this background the idea to use the data collected within the framework of Child Survival and Health Program (CSHP) funded by the United State Agency for International Development (USAID) traditionally focused on undernutrition and infectious diseases to develop a data base for surveillance of children eating habits was promoted by Private Voluntary Organization ACTS International and its affiliate ACTS Georgia implementing the project under CSHP in Georgia. In 2005 the Knowledge, Practice and Coverage (KPC) baseline survey was conducted within the project framework. KPC data collection included the data on eating habits (with special attention on breastfeeding) of children aged 0-2 years in the region of Kvemo Kartli and two cities of Imereti region. The KPC survey results demonstrated that the exclusive breastfeeding rate in the region is very low (16.1%). Immediate Breastfeeding is neglected. Percent of children, aged 0-23 months who were breastfed within the first hour after birth is less than 40%. The data for analysis and development of interventions aimed at improving children's nutrition were used for subsequent monitoring and surveillance. As a result regional capacity to monitor children's eating habits is increasing.

**G. Tsilosani, P. Blair,
R. Tataradze, E. Suladze,
L. Baramidze, T. Lobzhanidze,
T. Lomidze, M. Klibadze, K.
Sharangia. R. Urushadze**

The surveillance of new cases of depression in a Belgian network of sentinel family practices

Depression is high on the agenda of policy makers and health care providers. The development of a Belgian guideline on depression in family practice, lack of data and eagerness of the network members were the main reasons to set up a pilot registration study of new cases of depression. The aim is to describe the incidence of depression and quality of care. Patient characteristics include symptoms, risk factors, incapacity to work and health services use. In our pilot study we asked to register 5 new cases of depression and to complete follow-up forms afterwards. We also ask to comment the registration, particularly the completeness and clarity of instructions and registration forms. The Belgian guideline, a literature review and discussion were used for the research protocol and registration forms. In April all members of our network were asked to volunteer for the pilot. Mid June, participants received 5 registration forms, an instruction sheet and a questionnaire. They were asked to describe 1) prospectively 3 new cases between mid-June and mid-August and 2) retrospectively 2 new cases seen between March and April. After 2 months, they will receive follow-up forms covering 6 months for patients registered in spring, and 2 months for patients registered in summer. 98 of 170 eligible GPs volunteered for the pilot. The main results and conclusions will be presented at the conference.

N. Boffin, V. Van Casteren

Life isn't always beautiful: risk factors and health-seeking behavior for depression in Italy, PASSI 2007

Introduction: Depression is the leading cause worldwide of years lived with disability and has substantial personal, familial and economic costs. Although some population studies have been performed in Italy, few recent and local data are available on depression symptoms and related health-seeking behaviors. To examine this issue, we used preliminary data from PASSI, the Italian behavioral risk factor surveillance system. **Methods:** In PASSI, telephone interviews are conducted monthly by local health staff of a random sample of residents aged 18-69 drawn from local health registers. This analysis includes data collected in 50 of the country's 195 LHM in the first 4 months of survey operation. Persons were asked how many days over the past 2 weeks they 1) had experienced little interest or pleasure in doing things and 2) had felt down, depressed or hopeless. Each response was assigned a 0-3 score based on number of days and individual total scores were calculated (maximum 6). Those with scores ≥ 3 were considered depressed. **Results:** All interviewees responded to the questions, although 4% were unable to specify number of days. Seven percent were depressed, of whom 35% sought medical care; 40% hadn't sought help from anyone. Depression and HRQOL indicators were highly correlated. Depression risk factors in multivariate analysis included having financial difficulties, women, age 35-49 years, being unemployed, being unmarried, and having ≥ 1 chronic illness. **Conclusions:** Preliminary results indicate that acceptance and construct validity of the questions was high. Efforts are needed to encourage persons with depression symptoms to seek medical care.

Nancy Binkin

Prevalence of chronic diseases by gender in the foreign population. Vicenza City Hospital, ULSS 6

Objective: determine, classify and the rate of chronic pathologies in the foreign population, track changes over time and develop a long-term prevention and treatment program. **Methods:** Chronic patients were defined according to the regional protocol 13/2001; exemption from payment was determined in accordance with Law 124/98 and ICD-9-CM coding. Variables considered: gender, age exemption status, pathology, assistance code. Rates were calculated per 1000 inhabitants and on the basis of gender, age and the M/F ratio. All data included in the study is updated to the year 2004. Total population considered: 15,441 (8,591 males; 6,950 females). **Results:** 2.3‰ (360) of the population was not considered in this study. Total exempt were 414 (172 females; 242 males). Main pathologies: Hypertension 4.7‰ M/F = 1.5 (44/29); Diabetes: 4.7‰ M/F = 1.8 (46/26); Asthma: 2.6‰ M/F = 1.9 (26/14); Neoplasias: 1.9‰ F/M = 1.3 (17/13); Epilepsy: 1‰, F/M = 2.8 (11/4); Chronic hepatitis: 0.6‰, M/F = 3.5 (7/2); Chron's disease: 0.6‰ F/M = 2 (6/3); Glaucoma: 0.5‰ M/F = 1.3 (4/3); Rheumatoid arthritis: 0.4‰ M/F = 1 (3/3); Chronic renal insufficiency: 0.4‰ M/F = 1 (3/3); Hypothyroidism: 0.3‰ F/M = 4 (4/1); Psychosis: 0.3‰ F/M = 2 (2/0). **Conclusion:** Epilepsy, Chron's disease, hypothyroidism and psychosis is more prevalent in the females while diabetes, hypertension, asthma and chronic hepatitis are more frequent among the males.

Marisa Pacchin

Surveillance and prevention strategies for stroke in Lazio Region

Reduction of identified, modifiable dietary and lifestyle risk factors could prevent most cases of stroke. The Lazio region is implementing a stroke program contains integrated initiatives aimed at providing better stroke care and prevention at a regional level. Meaningful initiatives regard the stroke surveillance and the prevention of recurrent strokes. Two initiatives methodology and practical consequences will be described. Firstly, a Stroke Surveillance System is based on the permanent integration of administrative and clinical data. The first data are collected through Health Information Systems, containing data on emergency, hospitalization, outpatient care and mortality. The clinical data (onset symptoms, National Institute of Health Stroke Scale – NIHSS, risk factors) are collected through the registry of suspect acute stroke patients admitted to the Emergency Departments (ED) of the region. Secondly, the project on the prevention of recurrent strokes, in accordance with the National Health Ministry indication, is ongoing in 9 of the 12 territorial healthcare trusts of the region. The goal is to foster collaborative protocols aimed at improving the management TIA and stroke so to limit the chances of a recurrent cerebrovascular event. Such protocols involve the medical and paramedical staff of both the ED and the discharging ward and the primary care physicians. The protocol adopts the recent international cardiovascular diseases prevention strategies for clinical practice including the lifestyle and risk factors interventions.

**A. De Luca, S. Gabriele,
C. Francia, G. Di Gioacchino,
G. Guasticchi**

Practical challenges to developing questions for health behaviour surveillance: the Singapore experience

The questionnaire is the key instrument through which data is collected from the population in health behaviour surveillance. In developing the instrument for Singapore's Health Behaviour Surveillance, several challenges had to be overcome. Firstly questionnaire length imposed limits to the number and breadth of health topics that could be monitored. This meant that topics had to be prioritised and clearly defined, and at times further narrowed to identify specific modifiable health behaviours that could be monitored. The questionnaire had to be further customised to meet the stated objectives for each health topic. To ensure that the local population understood and answered the questions as intended, the questionnaire was tested in a selected population group (n=100), applying the Cognitive Aspects of Survey Methodology. Besides having to cater for non-English speakers, the testing revealed how local language norms and colloquialism made it necessary to adjust sentence constructs and vocabulary. Finally socio-cultural norms meant that certain topics were found to be too sensitive for the local population, and could not be reliably monitored. The process of developing the questionnaire highlighted the importance of establishing clear objectives, and localising the instrument.

**Leonard Yeo, Alison Prescott,
Yeong Chng Chee**

The utility of demographic surveillance systems (DSS) for chronic disease risk factor surveillance in developing countries

In many developing countries, lack of vital registrations systems means an absence of accurate data on the health status of the population and its dynamics. Demographic surveillance systems (DSS) have been set up in different developing countries in Asia, Africa and Latin America to address the gap in data on population health and dynamics. A DSS entails the regular monitoring of all people in a defined geographical entity for core demographic events like birth, death, marriage, in-migration and out-migration. Additional data on morbidity, socioeconomic status, and health seeking behaviour is usually collected. The DSS provides an ideal platform for monitoring trends in population health and for nesting studies on other health-related behaviour albeit in defined geographic areas. Assessment of behavioural risk factors for cardiovascular disease has been carried out in sub-samples of DSS populations in four DSS sites. The DSS offers an opportunity for panel surveys to monitor trends in risk factor profiles among the same population while accounting for population dynamics. It also provides an up-to-date sampling frame for nested studies as well as excellent research infrastructure. While DSS data may not be representative of the whole country, it provides evidence on trends that may reflect those in the whole country especially if several DSS sites are located in different parts of a country with varied geographical and socio-economic make-up. Examples of the application of DSS in risk factor surveillance for cardiovascular diseases in different DSS sites will be presented. Advantages and limitations of using DSS will be discussed.

**Catherine Kyobutungi,
James Ciera, Eliya Zulu,
Yazoumé Yé**

Relationship between major behaviour characteristics and cardiovascular diseases mortality rate among male population aged 40-59 years of Minsk-city

Purpose: to study the relationship between the major behaviour characteristics (smoking, alcohol consumption, physical inactivity) and mortality from the main cardiovascular diseases. **Methods:** a total of 4241 examined persons were selected at random from 6000 males aged 40-59 years of Minsk-city. **Results:** within a 25-year follow-up a total of 1153 deaths from all causes were registered that accounted for 27.88% of all random sampling. The mortality from cardiovascular diseases and ischemic heart disease was reliably higher among smokers (15.4% and 10.2%, respectively) as compared with never smokers (11.3% and 5.8%, respectively). An intermediate value (13.6% and 8.3%, respectively) was registered among the former smokers. Physical inactivity in spare time among manual workers was associated with a reliably higher frequency of deaths from cardiovascular diseases (18.2%) and ischemic heart disease (13.3%) as compared with their physically active colleagues (10.8% and 8.7%, accordingly). Depending on the frequency of alcohol consumption, the risk of death from cardiovascular diseases made up 17.9% when the consumption was frequent, 15.8% - when the consumption was moderate, and 14.1% - when the consumption was rare.

A. Grakovich, I. Kozlov,
V. Apanasevich,
L. Plaschinskaya

The link between surveillance and health promotion in Australia

The use of surveillance systems in Australia is becoming increasingly important as a means of monitoring the prevalence and location of chronic conditions within the community. The South Australian Monitoring and Surveillance System (SAMSS) has been in operation every month since July 2002. It is a continuous chronic disease and risk factor surveillance system involving telephone interviews (approximately 600 each month) of a random representative sample of the South Australian population of all ages. The prevalence of priority chronic conditions, risk factors and behaviours among various population groups are monitored. This presentation will highlight the effectiveness of SAMSS in identifying the need for health promotion action, the impact of various campaigns and the impact of various community events among both adults and children, using different cut offs and definitions. Some of the examples to be covered include obesity, physical activity, and fruit and vegetable consumption. The issue of the manner of analysis and presentation of these results will impact on how the effectiveness of the surveillance system is viewed is discussed and how the information will ultimately be translated into action.

Anne Taylor, Tiffany Gill

Prevalence of risk factors for cardiovascular diseases in Albania 2002-2004

Background: Cardiovascular diseases are a major public health concern in Albania. They are responsible for half of proportional mortality and are increasing in Albania. Monitoring risk factors in Albania has only started during the very recent years. **Methods and instruments:** The results included in this work, used two main national surveys carried out in Albania during 2002-2004 periods. The first one had a two scale cluster sample of 5697 females and 1740 males 15-45 years. The second study is based on a representing cluster sample of 14-18 years old students of all Albanian high schools. In both surveys the data are gathered by the means of standardized and tested questionnaires. **Results:** Prevalence of self reported hypertension among males and females 40-44 years is respectively 13% and 12%. For the same age-group the prevalence of diabetes is 2.9% at males and 1.1% at females. 57.6% of males and 16.1% of females at the age-group 15-44 years are or have been tobacco consumers. Hence, 44.3% of males and 4.8% of females drink alcohol almost every day. Among women there is noted a clear trend for higher use of tobacco and alcohol at higher social-economic categories. 12.5% of teenager males and 26% of teenager female consider themselves as overweight while this indicator when measured at women of 20-54 years of age goes as high as 38%. 23.1% of Albanian teenagers have problems with depression and this figure is even higher among females (27%). 24% of the same target population don't have any significant physical activity. Again, among females this indicator is higher (30%) **Conclusions:** Compared to other European populations, these indicators indicate a threatening health situation and must serve as advocacy means for intensification of preventive activities.

Alban Ylli, Eduard Kakarriqi

Predictors of Adherence with National Guidelines for Breast Cancer Screening in Italy: Results of Studio PASSI 2005

Introduction: In Italy, biannual breast cancer screening is provided free to all women aged 50-69, although in some regions, the screening program is more consolidated and active. A 2005 behavioural risk factor survey permitted evaluation of regional differences in self-reported screening behaviours and the effect of sociodemographic factors and counselling practices on adherence with guidelines. **Methods:** Telephone interviews of a random sample of >16,000 residents aged 18-69 drawn from local health registers of 122 of the country's 195 local health units (LHU); all 20 regions were included. **Results:** Of the 2,990 women aged 50-69 years interviewed, 57% reported a mammogram within the past two years. Screening adherence was similar in northern (69%) and central (62%) Italy but lower in southern Italy (34%; $p < 0.00001$). Adherence was significantly lower in unmarried women (49% versus 59%), in older (60-69 year) women (52% versus 61%), and in those with <9 years of education (55% versus 61%). Sixty-six reported having been counselled by their physicians to seek mammograms and 57% had received reminder letters from their LHU. Of those reporting both counselling and a letter, adherence was 76%, compared with 66% of those receiving only letters, 58% receiving only counselling, and 21% receiving neither. In multivariate analysis, residence, marital status, education, age, letters and counselling remained significant predictors of adherence. **Conclusions:** Considerable regional disparities were observed in adherence with breast cancer screening guidelines. Further efforts are needed to improve coverage, especially in southern Italy. Letters and counselling both appeared effective in increasing adherence.

Tolinda Gallo, Nancy Binkin,
Nicoletta Bertozzi,
Carla Bietta,
Giovanna V De Giacomi,
Pirous Fateh Moghadam,
Francesco Sconza,
Massimo Oddone Trinito

Are Residents of Friuli Venezia Giulia (Italy) undergoing recommended cancer screening? Results of Studio PASSI 2006

Introduction: In Italy, women between the ages 50 of 69 years are recommended to undergo mammography every 2 years and, between 25 to 64 years of age, to have Pap tests every 3 years. For both men and women >50 years, fecal occult blood testing (FOBT) is recommended every 2 years. In the Friuli Venezia Giulia (FVG) region, an organized mammography program was begun in 2005, while Pap testing has been routinely promoted since 1999. A colorectal cancer screening program is in the planning stage. To better understand current coverage, we used data from Studio PASSI for 2006. **Methods:** FVG participated in PASSI 2006, a cross-sectional survey which served as a pilot for the current national behavioural risk factor surveillance system (PASSI). Telephone interviews of 1103 residents 18-69 years, chosen randomly from the regional health registers, were conducted by local staff. **Results:** Of the 451 women 25-69 years, 82 % had undergone Pap testing within the past 3 years. Mammography within the past two years was reported by 69% of the 248 women 50-69 years. Only 14 % of the 457 persons over 50 years had undergone FOBT; levels were similar for men and women. Education and marital status were not associated with screening practices. **Conclusions:** The most consolidated program, Pap testing, has achieved high coverage, while mammography requires further promotional activities. In the absence of a program, FOBT is rare. PASSI represents a useful means of monitoring further progress of regional initiatives to improve cancer screening.

Tolinda Gallo,
Daniela Germano, Andrea Iob,
Ilva Osquino,
Maria Teresa Padovan,
Laura Pilotto,
Riccardo Tominz,
Massimo Zuliani

How do Italians feel about participating in a Behavioral Risk Factor Survey: Results of Studio PASSI 2006

Introduction: Attitudes about the usefulness of collecting information on health behaviors affects refusal rates in behavioral risk factor surveys (BRFS). To evaluate this issue in Italy, persons participating in a pilot cross-sectional BRFS were asked at the end of the questionnaire to state their opinion on "how important it is that their local health unit (LHU) continue to conduct interviews of this kind. **Methods:** Telephone interviews were conducted by a local health staff of a random sample of 4905 residents aged 18-69 drawn from local health registers of 35 of the country's 195 LHU; 7 of 20 regions were included. Refusal rate was 13%. **Results:** Of the 4881 persons who responded to the question, 92% expressed a positive opinion, including 48% who responded "very favourable" and 44% "reasonably favourable". When those who refused participation were assumed to feel negatively about such interviews, the positive opinion percentage declined to 81%. Significant regional differences were observed. Women and the more educated were more favourable to such surveys; no differences were observed by age. For many of the behaviours included in the survey, those who had less healthy behaviours (eg, at-risk drinkers, women who had not undergone recommended cancer screening) actually expressed more favourable attitudes than those with healthier behaviours. **Conclusions:** The favourable opinion of the persons interviewed as part of the pilot study is highly encouraging. Information on regions or subgroups with lower rates of positive response may be useful in targeting communications efforts with the public to maximize participation and representativeness.

Giuliano Carrozzì,
Cinzia Del Giovane,
Lara Bolognesi, Carlo Alberto
Goldoni, Gruppo PASSI 2006

The technologic infrastructure of PASSI: an innovative system using free and open-source software, Italy 2007

An ongoing surveillance system that ultimately will involve more than 180 local health units (ASL) and 21 regions of Italy requires a technical infrastructure that can serve the needs of 1) interviewers doing CATI or data entry from paper questionnaires; 2) coordinators at local, regional, and national level who must exchange information and monitor progress; 3) national coordinators who need to manage and analyse data and 4) interested stakeholders who desire access to results. Such a system requires flexibility given variable technical capacities and data collection methods. Furthermore, the system must be user-friendly, as independent as possible of operating systems and software packages, and records must be small enough to be easily transferred. The solution chosen was a smart client application that uses a readily-available internet browser. The two main components are a web platform to import, manage, and analyse the data, and a client stand-alone function for the data entry and saving on interviewers' computers. The system was developed using free and open-source software. The portal used to enter and send data (CMS-Drupal with extensions) was developed in keeping with Italian and international laws governing data access. Data are managed in an open-source SQL relational database, and an interactive data analysis system will be developed. Finally, mapping of data will be possible through an OGC-compliant webGIS. To date, >1000 records have been successfully entered and analysed. Although further adjustments are undoubtedly necessary, this system may provide a useful model for countries with limited financial resources interested in conducting ongoing risk factor surveillance.

**Paolo Brunetti,
Gabriele Dallago,
Steno Fontanari,
Stefano Menegon**

Does flu vaccination in Italy hit the target?

Introduction: Vaccination represents a safe and effective means of preventing influenza. In Italy, influenza vaccination is recommended for the elderly and persons with pre-existing pathologies such as heart disease and diabetes in whom influenza may cause serious complications. Although vaccination coverage among the elderly is available, little is known about coverage in those with chronic illness. **Methods:** The Local Health Unit 2 of Umbria participated in two sequential cross-sectional behavioural risk surveys, PASSI 2005 and 2006. Each year, 200 residents 18-69 years of age who had been randomly selected from the LHU population register were interviewed via telephone. Information collected included vaccination during the previous flu season and the presence of pathologies for which vaccination is recommended. Data for 2005 and 2006 were pooled, and analysis was limited to the 367 persons <65 years. **Results:** At least 1 pathology was reported by 13.9%, of whom 25.5% had been vaccinated during the previous influenza season. By contrast, only 7.6% of the population reporting no pathologies had been vaccinated ($p=0.00008$). Among those with ≥ 1 pathology, coverage increased from 17.6% in 2005 to 41.2% in 2006; no differences were observed between men and women (23.1% versus 28.0%), nor between those with <9 or ≥ 9 years of education (33.3% versus 16.7% $p=0.17$). **Conclusions:** Although coverage was higher in the at-risk population, the minority of those at risk for serious complications of influenza had not been vaccinated. Efforts are continuing to increase awareness of patients at risk and their physicians of the importance of vaccination.

Carla Bietta,
Igino Fusco-Moffa,
Marco Petrella

The Importance of Communication in Behavioural Risk Factor Surveillance Systems: The Italian Experience 2006-2007

Communication plays a crucial role in the establishment of new surveillance systems, especially in the early stages when the need to obtain consensus is essential, not only scientifically but also politically and socially. For this reason, strong emphasis has been given in the new Italian behavioural risk factor surveillance system (PASSI) to the development of a communication plan that is integrated with the planning, implementation, and monitoring activities of the system. Elements of the plan include the identification of local stakeholders, promotion of dialogue and integration between the involved institutional and social figures; goal sharing and establishment of consensus; definition of roles, functions and duties; exchange of information about activities and initiatives in progress; sharing of results, updates and changes; and the creation of a network of all professional figures involved in the system. Tools that have been used include preparation of training and promotional materials for different audiences including letters, brochures, posters, slide presentations; periodic meetings of coordinators; the creation of a public website for promotion of the study and eventual interactive databases providing tables and maps at local and regional level, a password-protected forum for open exchange between project participants; and the monthly publication of a bulletin ("PASSI-one"). Materials have been well-received and appreciated by local and regional staff, and a more formal user evaluation is planned to determine ways in which the system can be further improved.

**Eva Benelli, Barbara De Mei,
Stefano Menna**

Monitoring of PASSI (the Italian Behavioural Risk Factor Surveillance System) using the technologic platform e-PASSI, 2007

The PASSI computer network consists of an integrated client-server system for database management that facilitates both web-based CATI as well as data entry of paper questionnaires. It also permits calculation and visual presentation of various indicators useful for monitoring survey activities at national, regional, and local level. A series of indicators derived from the standard definitions of the American Association for Public Opinion Research and the Italian Statistics Institute (ISTAT) were selected and are routinely calculated at all three levels of the system: national, broken down by region; region, broken down by local health unit (ASL), and ASL, broken down by interviewer. Values outside pre-established levels are flagged, and interpretation of the indicators and possible causes of abnormal values are provided. Access is password-limited, with those at national level having access to all three levels, those at regional levels to national data, data for their region and ASLs, and those at local level to regional data and data for their individual ASL. In addition, periodic reports are e-mailed to regional and local coordinators. It is hoped that the system will provide a timely and effective means of improving the quality and representativeness of the data. A survey is planned shortly of all regional coordinators and a sample of ASL-level coordinators to assess the usefulness and limitations of such monitoring and determine ways in which it might be further improved.

**Sandro Baldissera,
Nicoletta Bertozzi,
Nancy Binkin,
Stefano Campostrini,
Giuliano Carrozzi,
Gabriele Dallago,
Angelo D'Argenzio,
Pirous Fateh-Moghadam,
Valentina Minardi,
Giada Minelli, Alberto Perra,
Massimo O.Trinito**

Risk factors for not undergoing cervical cancer screening in the Campania Region of Italy: Results of Studio PASSI 2005

Introduction: In Italy, Pap-test based cervical cancer screening programs were launched in 1995 and provide free screening every 3 years for women 25-64 years. In Campania, (population 5.7 million), coverage has remained low as a result of organizational and economic problems. To evaluate the prevalence and risk factors for never having undergone screening, we examined regional data from Studio PASSI 2005. **Methods:** Telephone interviews were conducted of residents aged 18-69 randomly selected from local health registers. Among the women 25-64 years in the sample, prevalence and risk factors for never having had a pap-test for preventive reasons was determined. **Result:** Among the 985 women 25-64 years, 37% reported never having had a pap-test. Risk factors for non-testing included being single (73% versus 30% among married/separated/divorced women; $p < 0.0001$), younger age (56% for those 25-34 versus 31% of those ≥ 35 years; $p < 0.0001$), not receiving a health department letter inviting them for an appointment (43% of those not receiving versus 27% receiving letters; $p < 0.0001$), and not receiving physician advice to be tested (66% for those not advised versus 21% for those who were; $p < 0.0001$). In the multivariate analysis, younger age, single status, not receiving physician advice and lower education emerged as significant risk factors for never having been tested. **Conclusions:** Many women in Campania have never been tested for cervical cancer. Efforts targeting younger, single, and less-educated women are needed. Health department letters appeared effective in increasing coverage and should be more widely implemented.

D'Argenzio Angelo,
Chianca Antonietta,
Pizzuti Renato

Cardiovascular Disease Risk Factors and Preventive Practices Among Adults - Friuli Venezia Giulia (Italy) Results of Studio PASSI 2006

Introduction: Cardiovascular disease (CVD) is the leading cause of death in Italy. Several medical conditions and behaviors (e.g., overweight, hypertension, hypercholesterolemia physical inactivity, and smoking,) and preventive practices (i.e., weight loss and smoking cessation) are associated with the development of CVD. To better target preventive efforts in the Friuli-Venezia-Giulia (FVG) Region, we examined prevalence of risk factors and of preventive practices, we examined data from PASSI 2006, a 7-region, cross-sectional survey which served as a pilot for the current national behavioural risk factor surveillance system (PASSI). **Methods:** Telephone interviews of 1103 FVG residents 18-69 years, chosen randomly from the regional health registers, were conducted by local staff. Overall response rate was 88%, including 23% refusals. **Results:** Regional prevalences were as follows: overweight/ obesity 41%, hypertension 23%, high cholesterol 21%, physical inactivity 20%, and smoking 33%. Attempts to lose weight were reported by 23% of overweight and 35% of obese persons. Among smokers, 45 % had attempted quitting in the past year. Substantial differences were seen in the prevalence of CVD risk factors and preventive practices by age, sex, and educational attainment. **Conclusions:** Although based on self-report, which may underestimate the prevalence of risk factors, our data suggest that the prevalence of CVD risk factors was similar to or higher than national averages from other sources, while the prevalence of preventive practices was lower. By identifying segments within the population with higher levels of these risk factors and lower levels of the preventive practices, public health personnel can better allocate resources and target CVD intervention efforts.

Tolinda Gallo,
Daniela Germano, Andrea Iob,
Ilva Osquino,
Maria Teresa Padovan,
Riccardo Tominz,
Massimo Zuliani

Predictors of Self-rated Health Status Among Residents AS Cosenza (Calabria) - Results of Studio PASSI 2005

Introduction: Self-rated health is considered a valid measure of health status in population studies, and understanding its correlates may help public health professionals prioritize health-promotion and disease-prevention interventions. We used local data from Studio PASSI 2005 to evaluate perceived health among residents of a local health unit (LHU) in Calabria, a region where health indicators including morbidity, mortality, and health care service coverage are consistently worse than national averages. **Methods:** Telephone interviews were conducted of 200 residents 18-69 years chosen randomly using local health registers of the Cosenza LHU. Respondents were asked to rate their health as very good, good, fair, poor, or very poor. **Results:** Overall, 9% rated their health as very good, 46% good, 36% fair, 9% poor. Factors associated with self-rated good/very good health included younger age (80% for <35 years versus 33% for ≥ 50 years), male gender (60% versus 51%), higher educational attainment (68% for >9 years versus 39% for ≤ 9 years), no chronic diseases (65% for none versus 11% for ≥ 1), normal weight (59% for BMI <25 versus 52% for BMI ≥ 25), and regular physical activity (61% versus 54%). The differences for age, sex, education and chronic diseases were significant at the $p < 0.05$ level. **Conclusion:** In Cosenza, levels of self-perceived good/very good health were lower than the multiregional average of 64% obtained in PASSI 2005 and are consistent with other health indicators for the area. Ongoing monitoring perceived health may be useful as a tool to evaluate local efforts to improve population health.

Francesco Sconza,
Amalia De Luca

Physical Activity and General Practitioners in the Province of Trento, Italy 2006: The relationship between their personal practices and the counselling provided to their patients

Introduction: Regular physical activity (PA) plays an important role in physical and mental well-being. Studio PASSI 2005 demonstrated that >50% of the population of Trento did not meet international guidelines for PA, and only 37% reported having received advice on PA from their general practitioner (GP). **Methods:** Following local initiatives designed to modify PA counselling behaviors of GPs (courses and published guidelines on promotion of PA), a telephone survey was undertaken of all 398 GPs to assess their counselling practices. In addition, the PASSI 2006 questionnaire was used to evaluate their personal levels of physical activity. **Results:** Response rate was 92% (365/298). Of those interviewed, 92% stated they had received the guidelines, of whom 35% reported that they subsequently provided more PA counselling to their patients. Those who reported receiving guidelines were more likely than those who had not to provide advice on places to exercise (41% versus 23%; $p=0.06$). Twelve percent of GPs were completely sedentary, 48% did some physical activity, and 40% met international guidelines. Of the sedentary GPs, 78% reported promoting PA versus 92% of the non-sedentary GPs ($p\leq 0.05$). The sedentary GPs were also less likely to provide advice on places to exercise (26% versus 41%; $p=0.07$). **Conclusions:** Providing guidelines to GPs has improved their promotion of PA among their patients, although observed values may be an overestimate resulting from social desirability bias. PASSI 2005 was useful in identifying a local health problem, and the current surveillance system will permit ongoing monitoring of additional interventions.

Pirous Fateh-Moghadam,
Enrico Nava,
Anna Maria Moretti,
Leo Florida

Tracking health conditions and risk behaviors in Corsica using the Italian surveillance system (PASSI) as a model

Non-communicable diseases are responsible for the vast majority of deaths in the European Region. The most important risk factors for chronic diseases are few in number and largely preventable. The European Union, within the framework of its programs of interregional cooperation (INTERREG) considers Corsica in France, Sardinia and Tuscany in Italy as one entity because of their common characteristics and geographical proximity. A new tool for monitoring the behavioral risk factors (PASSI) is being implemented in the Italian regions of Sardinia and Tuscany. We therefore have developed a proposal for a pilot study in Corsica to track health conditions and risk behaviors in the Corsican population. Since similar data will be available for Tuscany and Sardinia, it will be possible to compare the health situation regarding the risk factors and preventive interventions. The long term objectives of the project are to measure health and risk behaviors in Corsica; make available health indicators to policymakers at regional and local level; and evaluate the possibility of implementing a Corsican surveillance system. The project will be developed in 3 steps, the first of which is to realize a pilot study in Corsica, modeled after the project PASSI in Italy. Next, results of the pre-test study will be analyzed, and results compared with data from Tuscany and Sardinia. In this presentation, an outline of the project will be presented, including organization, stakeholders, and methods.

**Pascal Vignally,
Josette Dall'ava Santucci,
Jean Arrighi,
Jean Pierre Amoros,
Sandro Baldissera**

Risk reduction among hypertensive adults in Italy: Results of Studio PASSI 2005

Introduction: Hypertension is a major cardiovascular disease risk factor, especially in the presence of other risk factors such as smoking. Although pharmacologic management is the mainstay of treatment, weight reduction and physical activity are also recommended. To describe the prevalence of hypertension, concomitant risk factors and health behaviors, and physician advice, we used data from Studio PASSI 2005. **Methods:** Telephone interviews were conducted of residents aged 18-69 randomly selected from local health registers of 122 of Italy's 195 local health units; all 20 regions were included. Results: Of the 15,890 interviewed, 22% reported ever being told by a doctor that they were hypertensive, of whom 69% were on medication. Prevalence was highest among persons 50-69 years and with low educational attainment. Most hypertensives (92%) had undergone cholesterol testing at least once. Twenty-one percent were smokers, of whom 78% reported being asked whether they smoked, 74% being advised to quit, and 44% making ≥ 1 quit attempt the previous year. Physicians had reportedly questioned 45% about regular physical activity and provided advice to 52%, but 30% were completely sedentary. Overweight/obesity (BMI >25) was seen in 67%, among whom 58% reported receiving advice to lose weight, 33% were actually dieting and 23% were doing physical activity to lose weight. **Conclusions:** While cholesterol testing was nearly universal among hypertensives, far fewer had been asked or given advice regarding behaviors that contribute to or exacerbate health effects of their condition. Activities are underway to train general practitioners to ask and provide advice to at-risk patients.

Massimo O. Trinito,
Gruppo PASSI 2005

Urban environment, physical activity and obesity: a contextual analysis. Preliminary results of a pilot study in Paris (France)

Introduction: Paris is characterized by its heterogeneous demographic composition, a dense urban environment and very high population densities. There are cities in the city. Place where people live is an important factor in determining inequalities in health outcomes and health behaviors. The main hypothesis of our research is that both individual and contextual characteristics have an impact on health and behaviors. The social-ecological theory proposes that physical and social environments influence obesity through their effect on individual behaviors. **Methods:** The study was based on a phone survey among a sample of Parisian population. We designed a complex sample protocol with three degrees random sampling. The survey provides information on respondents' demographic characteristics, perceived health, physical activity, height and weight, social capital and perceptions of the neighborhood environment. The data analysis is based on multilevel models to take into account the hierarchical structure of the data. **Results:** Between November 2006 and December 2006, computer-assisted telephone interviews were completed by 732 landline telephone subscribers and 118 exclusive cell phone subscribers. Mean BMI for men was 24.2 and for women it was 22.2. Concerning obesity, the first contextual analysis indicates a strong neighborhood effect on obesity. **Discussion/Conclusions:** This pilot study allows obtaining robust data concerning perceived health and behaviors among the Parisian population. The first analyses help to better understand the individual and contextual determinants of obesity and overweight. The comparisons between districts constitute the originality of this study because this kind of data did not exist until now.

Emmanuelle Cadot,
Alfred Spira

Obesity & Physical activities Surveillance and policy activities in South Korea

As the major disease spectrum has changed over the decades, South Korean government must confront major challenges. In this presentation, epidemic of obesity, surveillance system for obesity and governmental policy activities in South Korea would be introduced. Obesity epidemic in Korea: In Korea, obesity-related medical expenses accounted for 0.91% to 1.88% of total national health expenditures in 1998, and this socioeconomic burden is likely to increase in the future In Korea. The prevalence of obesity (BMI>25) among adults has increased 1.6 times to 32.4% (35.2% in male, and 28.3% in female in 2005) and children and adolescents obesity aged 1-19 years is 11.5% in male and 9.7% in female, showing rapid increased rate. As for the physical activity, regular daily exercise rate among adults in 2005 is 18.8%. The regular physical activity of adolescent aged 12-18 years current rate is 7.1% and the high density physical activity rate is 33.91% in 2005. Surveillance and information system: The Korean Ministry of Health and Welfare, and the Korean Institute For Health and Social Affairs have conducted a "The Korea National Health and Nutrition Examination Survey (KNHANES) " every three years. A stratified multistage probability sampling design has been used in this survey. The data covers Koreans over the age of 20 and their health behavior such as smoking habits, drinking habits, exercise and medical utilization, and dietary habits. Also, Children health survey was started since 2005. Current Korean policy activities for Obesity Prevention: To improve the health condition of Korean people, the government has been developing and promulgating a series of policies, and implementing many projects. Korean Government announced long-term plan and goals in Health 'New Health Plan 2010' in 2005. Also to obtain the goal and objectives, Ministry of Health and Welfare has developed the program and operated the 'obesity prevention clinic', community -based obesity management program in 10 public community health centres since 2006.

Heui Sug Jo, Hun Jae Lee, Tong
Ryung Cheong

The Victorian Health Monitor – A Biomedical and Risk Factor Survey

Purpose: The Victorian Health Monitor (VHM) was conducted to inform the feasibility of conducting a larger scale survey across Victoria, Australia in 2008/09 and to provide a model for conducting similar surveys in other states of Australia. The survey will be conducted every five years allowing for comparison between current and future levels of overweight and obesity, diabetes and risk factors for heart disease in the adult population. The VHM will be integrated with broader national initiatives such as the National Diabetes Surveillance System. **Methods:** The VHM study was undertaken between April and August 2007. Cluster sampling was used with sample clusters based on the Australian Bureau of Statistics Census Collector Districts (CDs). One eligible adult aged 25 to 70 years from each household in each CD was randomly selected to participate in the study. The VHM comprised a cardiovascular risk factor survey, a self-administered dietary habits questionnaire and the collection of anthropometric and biomedical measurements. The study protocols were based on internationally benchmarked procedures used in population surveys for anthropometric measures and for carrying out venipuncture and laboratory testing. **Results:** The study determined barriers to participation such as fasting for the blood glucose test and participant willingness to have anthropometric and biomedical measures taken at a nearby testing site. Strategies were identified for optimising the participation rate. **Conclusions:** Future health measurement data collections such as the VHM are required to determine outcomes of major public health initiatives and to assess the growing impact of obesity and type 2 diabetes.

Loretta Vaughan,
Adrian Serraglio

Surveillance Data Identifies an Obesity Syndrome. What are the Likely Determinants?

If children are overweight or obese by four years of age the problem is likely to track into adolescence and adulthood with consequential development of chronic conditions. Australian population surveillance data shows that children's birth weight is increasing in recent years and that by four years of age twenty percent are overweight or obese. Other population surveillance data suggest this may be part of a family syndrome of weight gain which is driven by changing social determinants. These data come from cohort surveillance which shows that the age group most likely to put on five kilograms or more, over an average follow up period of four years, were the 18 to 39 year age group, who comprise the parent group of four year olds. This was true for both genders in this age group and weight gain was substantially and significantly greater than older age groups. Together these data suggest that overweight parents, increasing weight at birth and the proportion of children overweight by four years of age, comprise an obesity syndrome which has implications for surveillance and targeting of the obesity problem. Recent literature reviews suggest that the energy intake/energy expenditure equation is no longer an adequate explanation for obesity and that this reductionist theory on its own hides the complexity of developing and changing determinants that are interacting with the energy equation and driving weight gain. The importance of these variables will be discussed for inclusion in surveillance programs together with the changing family context. Surveillance systems have an important part to play in addressing the obesity epidemic but it is important they include the right determinants of the problem.

David Wilson

Tipping Points in Obesity – Experts Views of Ways to Change the Problem

This survey reports on the ways that obesity professionals; i.e. those working with the problem of obesity in different contexts and professional situations. It identifies the main things that need to be done to start the process of change in the obesity epidemic, from each health professional's experiential viewpoint. The phenomenon of change in society usually starts with a "tipping point." A "tipping point" is described in Malcolm Gladwell's book on the subject as the way in which trends, ideas and social behaviour take off in society. The spread of social behaviours is likened to an epidemic of contagious disease when social factors converge and the epidemic achieves critical mass and crosses a threshold. This point of take off is described as the tipping point where change begins and is acceptable to large sections of society. Experts in the field of obesity in this survey have identified "tipping points" under a number of headings including: inter-sectoral engagement, regulation/legislation, environmental change, building infrastructure, taxation changes, economic incentives, food and nutrition changes, promotion/marketing, empowerment and prosecution. Examples will be given under each heading. The survey of professional groups is an area of qualitative development for the business of population surveillance. Professionals working in specific disease areas have their own ideas of how problems occur in different population sub-groups, how they are sustained and ways in which they may be changed. Adding surveys of these professionals to population surveillance planning may enrich future population surveys.

David Wilson

Obesity – one of the main risk factors for noncommunicable diseases in Herzegovina – Neretva Canton (Bosnia and Herzegovina)

Introduction: Last years noncommunicable diseases have been the leading public health problem in develop countries as well in developing countries. Among them is a huge number of diseases which are in correlation with behaviour, with bad living habits and life styles. Noncommunicable diseases are very common in Bosnia and Herzegovina and in Canton Herzegovina-Neretva as well. In this paper we will show our experiences and our results collected in Ambulance for prevention of risk factors for noncommunicable diseases. **Material and methods:** We used a dates from Ambulance for the prevention of risk-factors which exists last five years. Our method was retrospective, epidemiological. All relevant datas are statistically analysed and some of them presented in tables and graphics. **Results:** Among our examiners 73,1% are overweight, in different levels, 39,5 % have high level of serum cholesterol, 44,2% high blood pressure, and 48,1% have a high level of blood sugar. We noted lack of physical activity by 73,1% examiners. **Conclusions:** Obesity is a very important health risk in Herzegovina –Neretva Canton. There are also presented other health problems connected with obesity.

Zarema Obradović

The “weight” of education: The effects of educational level on reported levels of overweight and obesity, Umbria, 2006

Introduction: The nutritional status of a population is an important indicator of its health status. Overweight and obesity affect quality of life and life expectancy and are associated with a number of adverse health outcomes. **Methods:** The Umbria region participated in PASSI 2006, a cross-sectional survey used as pilot study for the national behavioural risk factor surveillance system. Telephone interviews were conducted of 800 residents 18-69 years chosen randomly from the registers of the four local health units. Questions were included on weight and height, which were used to calculate body mass index (BMI); overweight was defined as BMI 25.0-29.9 and obese as ≥ 30.0 . **Results:** A total of 43.7% were overweight/obese (33.5% overweight and 10.2% obese). Men were more likely than women to be overweight/obese (56.1% vs 30.9% $p < 0.000001$); a gradient was observed with increasing age (30.5% at 18-34 years, 39.7% at 35-49 years, and 57.7% at 50-69 years; $p < 0.00001$) and decreasing educational level (55.8% for < 9 years, 39.4% for 9-13 years and 25.1% for > 13 years; $p < 0.00001$). The same characteristics were also significantly associated with obesity alone and in multivariate analysis remained significantly associated with the outcomes of overweight/obese and obesity alone. **Conclusions:** These results confirm the findings of others that low education levels are associated with overweight and obesity, even after controlling for age and sex. This information underlines the importance of social determinants in health status and will be useful in developing targeted interventions at regional level.

Carla Bietta, Marco Petrella,
Igino Fusco-Moffa,
Marco Cristofori,
Ubaldo Bicchielli,
Daniela Felicioni, Anna Tosti,
Mariadonata Giaimo

Measuring weight and height in adolescence: are self reported measure valid for BMI estimation?

The high prevalence of obesity among adolescents is a major public health issue in Western society (USDHHS, 2001; Hedley et al., 2004; Jolliffe, 2004; Mokdad et al., 2004). Prevalence information among different populations is a priority but at the same time the objective measurement of large samples is very costly. Surveys are a quicker and inexpensive solution, but the validity of self reported measurements needs to be assessed (Danubio et al., 2007; Mc Adams et al., 2007). The aim of this study is to assess on an Italian sample, the agreement between self-reported and objective measure of height and weight. A cluster sampling method (classroom-based) was used for the sampling according to the Health Behaviour in School-aged Children Survey (HBSC) International Study protocol (Currie et al., 2001). The 2006 sample of 6744 subjects is representative of 11, 13, 15 year old population from Veneto Region. In addition to the self-reported measure (SRM) of height and weight an objective measure (OM) for each subject was taken by trained health professionals. Each individual measurement was linked to the self-reported one. Lin's coefficient (1989, 2000) and Bland and Altman (1986) method were used to assess the agreement and showed a different patten for height SRM compared to weight SRM. 11 y.o. underestimate their height while 13 and 15 y.o. overestimate it. All age groups underestimate their weight. Although the underestimation and overestimation are limited for both measures, the BMI calculation could be affected. Great attention should be given to the age effect.

**Daniela Baldassari,
Massimo Mirandola,
Lorenza Dallago,
Massimo Santinello,
Oscar Cora, Linda Chioffi,
Giorgio Moretti,
Chiara Bertoncello**

Obesity and overweight

It is known that obesity causes an increase of the risk for some diseases, in particular cardiovascular pathologies and diabetes. Genetic or physiological factors interacting with behavioral aspects (sedentary life styles and bad habits alimentary, as consuming excessive amounts of sugars and fats) increase the risk of excess of weight and obesity. In Italy, the trend of obesity is growing although the levels in the adult population are not as high as the ones registered in United States and other European countries. However, it is urgent the realization of programs monitoring and contrasting obesity because of the strong impact of the phenomenon on the public health and use of health services. From the results of the Survey "Conditions of health and use of health services " carried out by Italian National Institute of Statistics in 2005, it is estimated that the majority of the adult population (18 year-old people and more) is in condition of normal weight (52,6%), more than a third it is in overweight (34,2%), 9,8% are obese and the remain (3,4%) are underweight. In particular obesity increases with the age, it is more diffused in the South of country and among the people of lower social status. Obesity is increasing: the obese adult people in Italy are about 4 million and 700 thousand, with an increase of 9% percent in comparison with five years ago. The findings of survey confirms the strong correlation between obesity and onset of cardiovascular diseases. Epidemiological studies highlight that the increase of the obesity in the last decade is more related to the reduction of the physical activity rather than to the increasing of the consumption of calories. From the results of the Survey it is estimated that about a quarter of the adult population is inactive, with strong variations for age; the quota is major among the people in excess of weight. The alimentary styles in our country are mainly influenced by the so-called "Mediterranean diet", with a predominant consumption of carbohydrates as pasta, bread and rice. In order to promote healthy styles of alimentation, in 2003, the Italian National Institute of Research for Nutrition and Foods spread guidelines for a Healthy Feeding. The findings of the survey "Aspects of the daily life" carried out by Italian National Institute of Statistics in 2005, let us monitoring some of the main aspects of these recommendations, in particular the daily consumption of fruit and vegetable (at least 5 portions a day). In Italy, the percentage of people who usually eat recommended quantity of fruit and vegetable is too low, mainly among the youngest.

**Alessandra Tinto,
Lidia Gargiulo,
Niki Stylianidou
Domenico Adamo**

An Italian general practitioners network survey on obesity

Purpose: To evaluate obesity, 40 GPs were engaged to perform a screening on a sample of patients randomly selected from their lists. **Methods:** Weight and height were measured in 1044 men and 1046 women aged 35-75, without previous cardiovascular disease (CVD). Body mass index (BMI) was categorized in normal weight (BMI 18.5-24.9 kg/m²), overweight (25.0-29.9 kg/m²) and obese (BMI ≥ 30 kg/m²). Food frequency, physical activity, smoking and use of medication were investigated through a questionnaire; CVD risk was assessed using the Italian CUORE Project score. **Results:** Prevalence of overweight was 50% in men and 34% in women; prevalence of obesity was 23% in men and women. Age-adjusted correlation analysis showed that BMI was inversely correlated with consumption of pulses, fish, wholemeal food, vegetables, rotisserie food, chocolate and sweet, and directly correlated with meat. Women eat vegetables, wholemeal food and chocolate more frequently than do men, and men eat more fry food, meat and sugared drinks than do women. Age-adjusted correlation analysis showed that physical activity during leisure time was inversely correlated with BMI. CVD risk score in 10 years was for women 3% for normal weight women, 5% for overweight, 7% for obese; for men: 8%, 11%, 13% respectively. **Conclusions:** Involving GPs for a preventive strategy means that they are made aware of the low proportion of normal weight persons in the population and how overweight and obesity are inversely related to low-fat foods and physical activity. Encourage GPs to counsel on healthy lifestyle is an achievable goal.

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F. Dima, L. Palmieri,
P. Ciccarelli, O. Brignoli,
G. Riccardi, S. Giampaoli

Responsible Serving of Alcohol in NSW Australia: Use of Surveillance Data to reduce alcohol related harm in the community

Whilst the profits from the sale of alcoholic products are enjoyed by the relatively few individuals who invest in these commercial ventures, the substantial social costs of the consumption are borne by consumers and their families and the rest of society. Actions aimed at engaging alcohol vendors in responsible serving of alcohol have not generally proven effective. Inspired by the need for intersectoral collaboration as described in the Ottawa Charter for Health Promotion, this paper describes the results of collaboration between the Police, Local Government and the Health sectors working together to address this issue in New South Wales (Australia). The presentation describes how delivery of strategic surveillance information using risk assessment technology on routine police attendance of incidents, together with data from regular CATI surveys of the population have been at the core of the capacity building exercise aimed at skilling a variety of Government Departments to reduce alcohol related harm. The presentation will provide details of changes in police activity as well as statistically significant gains over time in various geographical areas. Additional pressure is also brought to bear through strategic trend results of CATI surveys of the population regarding their experience of responsible serving of alcohol by the industry. Information will also be provided of the increasingly visible presence of government and regulatory authorities engaging with the alcohol industry, partly as a result of this work.

**Edouard Tursan d'Espaignet,
John Wiggers**

The alcohol use associated to the risks for the health in Friuli-Venezia-Giulia (Italy) - Results PASSI 2006

Introduction: Excessive alcohol use has numerous adverse health consequences. In the Friuli-Venezia-Giulia (FVG) region, which has a population of 1.3 million, approximately 6000 alcohol-related hospitalizations annually and 1500 deaths occur annually. **Methods:** We used data from PASSI 2006, a cross-sectional telephone survey conducted at local level. 1103 respondents in the region's 6 local health units (LHU). *Binge drinking* was defined as ≥ 6 drinks on ≥ 1 occasion in the past month, and *heavy drinking* as ≥ 3 drinks/day for men or ≥ 2 drinks/day for women during the past month. **Results:** The prevalence of binge drinking was 16% (range 12% in LHU1 to 18% in LHU4). Binge drinking was significantly higher in men (27%) than in women (5%; $p = 0,0000$) and highest among those 18-24 years (31%; $p = 0,0000$). Prevalence of heavy drinking was 6,1% (range 4,3% in LHU1 to 6,5% in LHU 4). A greater proportion of men than women (10,8% versus 1,8%; $p = 0,0000$) reported heavy drinking; among men, the highest rates (14,5%) were in those 50-69 years. During the past month, 26% of respondents reported they had driven after drinking, and 16% reported riding in a car or other vehicle driven by someone who had been drinking. **Conclusions:** In FVG, the prevalence of alcohol-related behaviors associated with an increased risk of alcohol-related traffic accidents and other adverse health consequences was high. Our data suggest that young men should be the principal target for binge drinking prevention strategies, while men, particularly those >50 years, for strategies to reduce heavy drinking.

Tolinda Gallo,
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Daniela Germano,
Andrea Iob, Ilva Osquino,
Maria Teresa Padovan,
Riccardo Tominz,
Massimo Zuliani

Use and abuse of alcohol among the young people

The aim of this work is to analyse the patterns of consumption of alcoholic drinks in Italy among the young population. Recently in Italy unhealthy habits of alcohol consumption are spreading (binge drinking, consumption between meals). Simple and multivariate data analysis were carried out on the youth of 11-24 years according to the results of the multipurpose survey on Italian households "Aspects on daily living". Data was collected by ISTAT in 2006. Preliminary analysis shows that in Italy about 50% of young has consumed alcohol at least once in the last year. Boys consumed alcohol more than girls (55,5% boys, 44,1% girls) even if in the last years the increase of use among girls is higher than among boys. Besides this, 6,3% of youth referred to consume alcohol every day, 8,8% drunk alcohol between meals at least once in a week and 10,2% got drunk at least once in the last year. A cluster analysis was performed and the young population was split into different groups according to the use of alcoholic drinks and others life styles (physical activity, obesity, smoking, entertainments). The results show that age is the main discriminant: in the groups of the youngest (11-15 years) the majority of people do not consume alcoholic drinks and do not have other unhealthy habits: they are not obese, don't smoke, are physically active; in the groups of the oldest (16-24 years), the majority consumes alcoholic drinks (even if with different patterns of use), often associated with other unhealthy habits: they are physically inactive, obese and smoke. It is only a question of time? The youngest people could potentially became alcohol consumers; this is the reason why it is really important to focus new politics on arresting these risky patterns of consumption of alcohol among young people.

Emanuela Bologna,
Domenico Adamo

Incidence and Mortality of Acute Myocardial Infarction in Tuscany before and after the Italian smoking ban

To describe trends of mortality and incidence for Acute Myocardial Infarction (AMI) in Tuscany before and after the Italian smoking ban (January 10, 2005). 2000-2005 AMI deaths recorded in Tuscan Mortality Register and 2000-2005 incident AMI cases in Tuscan AMI Register were selected. AMI incidence and mortality rate trends were analyzed using a Poisson model, adjusting for gender, age, and 2000-2004 temporal trend. After the introduction of the ban, a significant 19-percent decrease in AMI mortality for people aged 35-64 years was recorded (table 1). Considering the period Jan2000-June2005, a significant 27-percent decrease in mortality was recorded. Considering the period Jan2000-April2005, a significant 9% decrease in AMI incidence in men aged 30-64 years was recorded after the ban (table 1). A significant decrease in AMI incidence and mortality was recorded in the first 4-6 months after the introduction of the ban, in particular in men aged 30-64 years. This trend was similar to the trend of cigarettes sales in Tuscany, which decreased by 10.2% in Jan-Apr 2005, and by 5.2% in May-Dec 2005, in comparison to 2004.

Table 1. AMI Mortality and Incidence Relative Risks (RR), year 2005 versus 2000-2004, by age and gender.

		Mortality		Incidence		Incidence, Jan-Apr	
		RR	CI 95%	RR	CI 95%	RR	CI 95%
30-64	Men	0.83	0.68-1.02	0.97	0.92-1.02	0.91	0.83-0.99
	Women	0.72	0.46-1.11	0.97	0.87-1.08	1.09	0.91-1.30
	Total	0.81	0.68-0.97	0.97	0.92-1.01	0.94	0.87-1.02
65-84	Men	1.02	0.93-1.11	0.93	0.90-0.97	1.02	0.97-1.09
	Women	0.91	0.83-1.00	0.87	0.84-0.91	0.92	0.85-0.99
	Total	0.96	0.90-1.03	0.91	0.88-0.94	0.98	0.94-1.03

Antonio Gasparrini,
Giuseppe Gorini,
Elisabetta Chellini,
Alessandro Barchielli

Italy & Austria Before and After Study: second-hand smoke exposure in hospitality premises before and after two years from the introduction of the Italian smoking ban

Objective: To compare second-hand smoke (SHS) exposure in hospitality premises (HPs) in Italy and in Austria before and after two years from the introduction of the Italian smoking ban (January 10, 2005). **Methods:** 19 Austrian (Vienna) and 28 Italian (Florence, Belluno) HPs were sampled before and after two years from the Italian ban. Post-ban samples were also collected in 27 HPs in Turin, Milan, Naples. The SHS marker was vapour-phase nicotine, measured using passive samplers, following the method by Hammond et al. **Results:** We analyzed 262 samples from 74 HPs. In Vienna the medians of pre and post-ban nicotine concentrations were, respectively, 11.00 $\mu\text{g}/\text{m}^3$ (mean: 23.58; IQR: 2.53-30.38) and 15.76 $\mu\text{g}/\text{m}^3$ (mean: 17.73; IQR: 2.22-31.93), with no significance differences. In Florence and Belluno bars, restaurants, and discos/pubs, nicotine concentration significantly decreased, in median, from 19.02 to 0.25 $\mu\text{g}/\text{m}^3$; from 2.03 to 0.10 $\mu\text{g}/\text{m}^3$; from 35.16 to 0.01 $\mu\text{g}/\text{m}^3$, respectively; overall, median decreased significantly ($p < 0.001$) from 8.86 (mean: 45.25; IQR: 2.41-45.07) to 0.01 $\mu\text{g}/\text{m}^3$ (mean: 1.32; IQR: 0.01-0.41). Post-ban measurements in Naples, Turin, and Milan (mean: 2.79; median: 0.01 $\mu\text{g}/\text{m}^3$; IQR: 0.01-0.16), confirmed post-ban measurements in Florence and Belluno. **Conclusions:** This study showed a drop of more than 95% in SHS exposure in a sample of 28 HPs located in 2 Italian towns after 2 years from the introduction of the ban, confirmed by post-ban measurements collected in other 27 HPs from 3 different Italian towns, whereas in Vienna, where no anti-smoking law entered into force up to now, SHS exposure levels were non-significantly different from those recorded 2 years before.

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Inequalities in smoking

This paper analyses Italian attitude towards smoking in eight consecutive birth cohorts, in order to address the implications for tobacco control policy. The analysis is based on data from the “Health conditions and resort to sanitary services” survey carried out in Italy from July 1999 to June 2000 by the National Institute of Statistics (ISTAT 2001). Data are analysed according to gender and educational level. Across subsequent generation smoking prevalence shows a general downward trend, with a more marked decrease starting from 1975-1980; a positive association between education level and smoking prevalence decline is observed for both genders. The incidence of early smoking cessation increases in both genders and education levels, but with different extent: the gap between the two genders and, to a greater extent, between the two education levels increases across successive birth cohorts, becoming particularly relevant in the youngest cohorts. Overall results highlight that in Italy the decline in smoking habit is closely associated with social advantage and to a lesser extent with gender. These differences could reflect the effects of tobacco control strategies: in Italy until 1990 intervention were sporadic, involving only school and health professions. Only later campaigns became more community oriented, including media and mass events. The National Health Services have ignored this inequalities until now: education differences are not evaluated, and gender differences although evaluated are not taken into account in NHP. A comprehensive tobacco policy, aiming to narrow socio-economic inequalities in smoking should be developed in Italy. National and regional health plans should include goals and objectives specifically oriented to reduce gaps in smoking, and actions should be specifically tailored for deprived groups.

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Youth smoking in Lombardy Region

A periodical surveillance about smoking in youth of the Lombardy Region (Italy) began in 2004 within the WHO-CINDI program in Italy. The survey was done at school by a self-administered questionnaire in a representative sample of 11,470 students (6050 males and 5400 females) aged 13, 15 and 18 years. The prevalence of smokers among 13 years old was 6.6% in boys and 5.4% in girls. At 15 years of age it reached 26.9% in males and 26.3% in females, while at 18 years 33.9% in males and 32.7% in females respectively. The mean number of cigarettes/week was 9.12 in the youngest cohort and 2.5 in the oldest one. Smokers stated a low progress at school ($p < 0.001$) and to receive higher weekly tips from parents ($p < 0.001$) than no-smokers. Smoking prevalence among family members and friends were highest ($p < 0.001$) in students who smoke; these ones declared that they started smoking for the pleasure, wellbeing sensation and relax coming from the cigarette, not for imitation. The knowledge of tobacco dangers to health was not different in smokers and in non-smokers. Females replied more exactly than males to the questions concerning health damages due to tobacco. The survey will be repeated in 2009 at regional level.

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Survey on smoking and physical activity in Nursing students

The study reports the results of a survey about smoking and physical activity done by self-administered questionnaire in nursing students at Pavia University. Responders were 393 (80% M= 132, F= 261, mean age 24.66 ± 5.64). 45% of the students (51.5% males and 41.8% females) were smokers while ex smokers were 9.7%. Cigarettes consumption was 12.33 cigarettes/day in males and 10.49 cigarettes/day in females; males began smoking at 16 years of age, while females began at 17 years. 66.5% of smokers stated they would like to quit and the most of them were pressed in this decision by family (49.7%) and friends (49.2%). The prevalence of self-assessed overweight was 31.1% in males and 11.6% in females. Several students had a wrong perception of their weight: 34.1% of males and 6.5% of females thought to be overweight even if they had normal BMI. 48.5% of males and 24.9% of females played a sport currently. Males who practiced heavy physical activity (1-4 hours/week) were more than females (25% vs 18.8%). On the contrary females practiced light physical activity more than males (18% vs 12.9%). The results will be used to project interventions aimed to quit smoking and to lose weight, if necessary.

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Effects of a Comprehensive Law Banning Smoking in Enclosed Spaces in the Province of Trento, Italy 2005-2006

Introduction: In January 2005, Italy banned smoking in all enclosed spaces open to the public, including offices, bars, restaurants, clubs, and discos. To examine effects of the law at local level in the Province of Trento, we used data from various sources including Studio PASSI 2005. **Methods:** Data sources included cigarette sales-data from the Trentino-Alto Adige region (which includes a second province, Bolzano), data from Studio PASSI 2005, a cross-sectional survey conducted at local level as a pilot study with the objective of testing methods and logistics of data collection on health behaviours, and data from a local 2006 cross sectional survey on smoking which included the smoking section of the PASSI questionnaire. **Results:** Compared to 2004, cigarette sales in Trentino-Alto Adige declined 8.8% in 2005, the equivalent of 5.6 million packs of cigarettes; the national average reduction was -5.4%. Studio PASSI 2005 demonstrated that 31% of smokers in Trento reported smoking less and 21% had tried to quit smoking as a result of the law. In the 2006 survey, 32% reported smoking less, 18% had tried to quit, and 25% of those who quit after the ban thought the law had influenced their decision. **Conclusions:** The smoking ban was effective and resulted in a reduction of cigarette consumption in Trentino-Alto Adige. The transformation of PASSI in the current surveillance system will permit ongoing monitoring of smoking behaviour at local level.

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Factors influencing smoking cessation in Italy

The aim of this work is to identify the main factors which might influence smoking cessation in order to support tobacco-control policies. Data source on tobacco consumption among the Italian population aged 14 years or older is the survey "Health conditions and access to health services 2004-2005" whose main aims are to provide a measure of perceived health, chronic conditions, disability, use of health services and health related behaviours. In Italy among the population aged 14 years and over, the smokers are 21,7%, those who have never smoked are 49,1% and smokers who gave up smoking are 29,2%. The percentage of former smokers is increasing in the last years and it is higher among men (26,4%) than women (14,5%). Among men the rate of former smokers increases when the age raises: from the 5,5% among young people (14-24 years old) to 58,0% among elderly people (75 years and over). Women aged 45 years and over with higher level of education give up smoking more frequently than those of the same age with lower level of education. In average people give up smoking at 40 years (38 years for women and 41,4 for men). They give up smoking after 22 years of smoking habit (18,3 for women and 24 for men). The analysis is based both on smokers who tried to give up smoking and smokers who succeeded in the attempt during the 12 months before the interview. Logistic regression was performed to predict the smoking cessation probability based on a set of categorical variables: age group, sex, level of education, perceived level of household income, number of years of exposure to tobacco, number of cigarettes smoked a day, method used to abandon the habit, presence of severe diseases. The estimated odds ratio let us rank the relative importance of independent variables and assess interaction effects. The features which affect more strongly the smoking cessation are the higher social status (higher instruction and more means), the smaller exposure to tobacco in number of years and the help of a doctor in the attempt to quit. Furthermore, the two opposite groups of the occasional smokers (not smoking every day) and the heavy smokers (smoking 20+ cigarettes a day) are those with the higher probability to succeed in the attempt to quit smoking. It remains a strong disadvantage for people with a lower socio-economic status, both in terms of smoking rate and in term of attempts and success in smoking cessation.

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