Department of Hygiene & Epidemiology
University of Athens

CEREPRI
Center for Research and Prevention of Injuries

APOLLO: Strategies And Best Practices For The Reduction Of Injuries

Grant Agreement 2004119
First Interim Technical Implementation Report
Month 1 – 12

Prepared for the European Commission
January 2007

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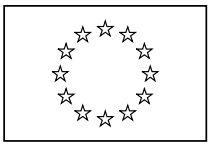

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Prepared by (in order by work package):

Main beneficiary:

Work package (WP) 1: Prof Eleni Petridou, Ms Stephanie Anast, Department of Hygiene and Edpiemiology, Medical School, University of Athens (UoA), Athens, Greece.

Associated beneficiaries:

- Work package 2: Dr. Maria Segui-Gomez, Universidad De Navarra (UDN), Pamplona, Spain (ES)
- Work package 2: Dr. Saakje Mulder, Stichting Consument En Veiligheid (CSI), The Netherlands (NL)
- Work package 2: Dr. Alessio Pitidis, Istituto Superiore Di Sanita (ISS), Rome, Italy (IT)
- Work package 2: Dr. David McDaid, London School Of Economics & Political Science (LES), London, United Kingdom (UK)
- Work package 3: Dr. Witold Zatonski, Promocja Zdrowia – Zdrowie Albo Tyton Fundacja (Fpz), Warszawa, Poland (PL)
- Work package 3/4: Dr. Eva Negri, Instituto Di Richerche Farmacologiche « Mario Negri » Fondazione (IRF), Milano, Italy (IT)
- Work package 5: Dr. Rupert Kisser, Mag. Claudia Koermer, Austrian Road Safety Board (former Sicher Leben), Vienna, Austria (AT)
- Work package 5: Mr. Yousif Rahim, Karolinska Instutet (KA), Stockholm, Sweden (SW)

- Work package 5: Dr. Jack Dowie, London School Of Hygiene And Tropical Medicine Salvage Assn Of London (Lsht), London, United Kingdom (UK)

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Contents

Summary

Injuries are one of the most serious public health problems facing the European Union claiming over 230 000 lives per year. Throughout the years, the European Commission (EC) has been a major supporter of injury prevention by funding past projects which focused primarily on building the technical infrastructure and human networks as the prerequisite for injury prevention. In 2004, the focus shifted when the APOLLO project was awarded by the European Commission. This project is unique in two fundamental areas: 1) APOLLO has brought together a wide range of European scientists and public health practitioners with expertise in injury prevention in all age groups and therefore, can be classified as the largest ever effort in EU injury prevention so far and; 2) APOLLO has shifted the focus from data collection to applying the knowledge and developed tools through the designing and carrying out of evidence-based and cost-effective interventions. Moreover, APOLLO has dedicated an entire work package to dissemination as it is essential to ensure activities and results are being effectively communicated to the scientific community as well as to the relevant stakeholders, decision makers and the public at large.

The APOLLO project started in December 2005 and is a three year project. The European Commission has funded 60% of the expenditures. There are ten associated beneficiaries and one main beneficiary, the University of Athens, Greece, as well as an additional twenty participants.

APOLLO aims to provide: (a) the evidence on the health and financial burden of injuries and easily measurable indicators and (b) recommendations on how to overcome the barriers in applying existing best practices and efficient policies to decrease the most common injuries in the EU member states with specification of success and failure factors for implementation of injury prevention programs in all age groups and all types of injuries. Concurrently, the implementation component of the project will focus on two major injury fields: (a) falls among elderly and (b) injuries among vulnerable road users. Both areas are chosen because they are linked to high injury burden and/or existence of good preventive measures and yet these measures have not been translated into effective prevention. APOLLO will develop EU-wide prevention models, expand on recommendations from the strategic planning

and measure the results, in terms of actual efficacy of the initiatives undertaken. Dissemination activities will culminate in scientific platforms with input from practitioners in the field, injury victims and policy makers. These activities have been divided into six integrated work packages.

This interim report presents the one year progress, from December 1, 2005 to November 30, 2006, of the APOLLO project (Grant agreement: 2004119). Summarizing, all tasks in operation during this first year have been successfully completed as planned within the approved timeframe and budget.

Briefly, progress includes the following:

- Development of a consolidated work plan and timeframe (work package (WP) 1).
- Development of a web-based query on census and hospital discharge data (WP2).
- Creation of 20 different computer programs to standardize the two statistical computer programs (STATA and SPSS) and the hospital discharge data diagnoses codes (ICD9 CM and ICD-10). These computer programs are available for free use with the copyrights (WP2).
- Identification and selection of good practices and policies per injury priority (road traffic, alcohol-related and occupational) (WP3).
- Identification of important findings from preliminary results of review of studies on the attitudes of the elderly people, which in turn will contribute to the design of the study questionnaire (WP4).
- Development of the draft report 'Initiatives for intervention of vulnerable road users in the EU-25' (WP5).
- Development of an NGO (non governmental organizations) inventory list and consensus building for production of draft fact sheets for injury prevention (WP6).

Work Package 1: Project Coordination
Drafted by Stephanie Anast, University of Athens, Greece

1.1 Introduction

The objective of this work package (WP) is the overall day to day coordination of the project, including all administrative and financial matters. Furthermore, it aims to ensure the work packages are being carried out according to the timetable and that there is open and regular communication between all associated beneficiaries.

1.2 Description of work

In accordance to the contract (Article 1.2.1 and 3.3.1.2 of Annex I), the following tasks have been carried out.

1 A detailed work plan was created in collaboration with associated beneficiaries to describe all tasks to be carried out throughout the three year term. This included the timeframe, deliverable completion dates and corresponding budget per tasks.

2 To clarify the roles of all project participants and ensure a common understanding of these roles, the 'Terms of Reference' (Appendix I) were produced and approved by all associated beneficiaries.

3 WP1 established all meeting dates, the scope of each meeting and report submission dates at the start of the project. This information was distributed to all associated beneficiaries.

4 To ensure effective monitoring of all objectives and tasks, progress reporting was established. WP1 designed a template to facilitate this process. Each WP leader was requested to complete a progress report for their entire work package every six months. The first one was completed in June and the report was sent to the EC for their information. Acknowledgement of receiving this document was given, yet comments on the content of the report were never received.

5 Communication activities involved four bi-monthly telephone conferences with work package leaders to discuss progress and concerns. WP1 coordinated these conferences by producing an agenda, chairing conference call, drafting minutes and following up on discussed tasks. Furthermore, these conference calls were intended to stimulate synergies across the work packages.

6 WP1 organized one meeting with the work package leaders in Vienna in June 2006 to come together to discuss the mid-term progress of the project and highlight any achievements. This entailed preparation documents for the meeting, chairing the meeting, highlighting areas of progress and synergy, gathering documents after the meeting, drafting minutes and following up on agreed upon tasks. The minutes from this meeting are in the Appendix I. A second meeting was held in December 2006, yet details on that meeting will be included in the second interim report. Six meetings with leaders have been provisioned throughout the three year term of APOLLO.

7 WP1 has and continues to respond immediately to all inquiries made by leaders and associated beneficiaries regarding technical, administrative and financial issues via emails and telephone calls.

8 WP1 communicated to associated beneficiaries the importance of acknowledging the EC on all documents in accordance to Article II.5 and drafted a paragraph as a template to be used by all participants of APOLLO.

9 WP1 established an interim report template to facilitate all work package leaders for the drafting of the interim report. Furthermore, WP1 coordinated the entire process of the interim report, including sending out template, reminders, deadline dates, gathering documents by each WP leader and combining it into one report.

10 Dissemination activities included the drafting of a preliminary dissemination scheme in order to stimulate discussion and action between associated beneficiaries. It is of utmost importance to effectively disseminate the deliverables of this project to the respective target audiences and together with all WP leaders, a communication plan will be established.

11 WP1 issued payment to the associated beneficiaries.

1.3 Results

- Terms of Reference document (and approval by associated beneficiaries)
- Meeting dates and report submission dates
- Consolidated work plan (timetable and budget)
- Progress report template
- Consolidated progress report
- Dissemination of consolidated progress report to EC, Working Party on Accidents and Injuries, Secretariat of Working Party Leaders (to distribute to their network) and to all participants of the APOLLO project (over 25 persons)
- Agenda/minutes from telephone conferences with work package leaders
- Highlighted areas of synergy between different sub-projects, which stimulated collaboration between respective persons
- Agenda/minutes/documents from first work package leaders meeting in June 2006 (Appendix I)
- Completed technical and financial interim report

1.4 Promotion/dissemination

The main dissemination task involved the consolidated progress report which was sent to the European Commission, Working Party on Accidents and Injuries, Secretariat of Working Party Leaders (to distribute to their network) and to all participants of the APOLLO project (over 25 persons). In addition, two articles about the objectives and purpose of APOLLO were drafted and printed in the '*Action* on accidents and injuries' newsletter (issue 5 and 6).

1.5 Next steps

WP1 Coordination will continue with the day to day coordination of the APOLLO project. This will include issuing the second interim payment, monitoring the objectives and progress of the project through the progress report, bi-monthly telephone conferences with the WP leaders, and coordination of the WP leaders meetings. Furthermore, WP1 will collaborate with all WP leaders to develop a clear communication plan to describe which deliverables will be promoted, how they will be disseminated and to whom. Lastly, WP1 will review all deliverables to ensure they are of good quality.

Work Package 2: The burden of injuries in the EU: indicators and recommendations for prevention and control

Drafted by Drs. Segui-Gomez and Ewert.

2.1 Introduction

The objective of this package is to produce and divulge measures of burden of injuries among EU citizens while building capacity among EU researchers to document such burden. The produced evidence should be relevant for European policy makers since the package will also provide them with information on the efficiency of relevant injury prevention interventions.

In order to achieve this objective, the work package was structured around six modules: the 'core' project which aims to use existing health-related databases across Europe to assess the frequency and severity of injuries, led by Dr. Segui-Gomez, and five subprojects each led by a different senior researcher and addressing costs issues (Dr. Mulder NT), cost benefit and cost effectiveness issues (Dr. McDaid, UK), exposure issues (Dr. Petridou GR), injury severity issues (Dr. Pitidis, IT), and policy issues (Dr. Skalkidis). Since each of these subprojects and their leaders were subscribed as partners for the APOLLO project at large, it falls directly within their responsibility to report on the progress of their projects, which is included on the following pages. Thus, this section focuses on the core component of WP2, a component that amounts to 38% of the WP2 total budget or 11% of APOLLO.

The WP2 core package addresses the problem that in Europe we are lacking population-based data on injury frequency and injury severity for non-fatal injuries. Compared with fatal injuries, which are officially reported by all EU countries to international organizations, such as the WHO, or to the EUROSTAT health information system, data on non-fatal injuries is lacking. The existing Injury Data Base (IDB) system does not cover all countries, even for participating countries it rarely achieves national representativity, it does not include all types of injuries (most only cover consumer-product related injuries), relies on medical assistance at the emergency department level, and has failed to produce a patient-level type of reporting system that researchers around the world can use to explore epidemiological questions related to injury control and prevention.

Of the 14 specific objectives listed in point 1.4 of the Annex I to the APOLLO Contract, that is, specific objectives related to the whole APOLLO proposal, 5 are related to WP2 core activities. These are:

1. *To map the urgency for taking action for prevention of injuries due to the magnitude of the problem by calculating an array of indicators which are in accordance to the work proposed by the Working Party on Indicators –*
   As it will be described in more detail below, WP2 core uses all indicators produced by the Working Partly on Indicators and some more to summarize injury data as reflected in Hospital Discharge Data and other well-established health data sources
2. *To build capacity among new member states to adequately measure their burden of injuries with a view of monitoring the impact of their injury prevention efforts*
   Of the countries participating on WP2 core activities, eight are new member states and the vast majority have chosen to conduct the analysis

in house with the tools that we have developed. Tools which they get to keep and use in the future is so desired.

3. *To develop the theoretical framework for essential indicators, which are currently missing with integration of injury severity measures and exposure to risk denominators*

   In addition to the work conducted under two WP2 subprojects (lead by Drs. Pitidis and Petridou), WP2 core has established which currently suggested indicators can be used with hospital discharge data and is producing them with age- and gender-specific population based denominators

4. *To produce tools for linking injury severity with health outputs and costs by member states*

   In addition to the work conducted another WP2 subproject led by Dr. Mulder, WP2 core has produced new or delivered available computer algorithms to transform descriptive injury data coded in either ICD-9-CM or ICD-10 into AIS

5. *To recommend appropriate future data collection efforts*

   Based on the analysis of the hospital discharge data (during Year 1) and the in-depth interviews conducted with all participating countries, we are elaborating a manuscript with specific suggestions on the future of injury-related data collection efforts

The tasks of WP2 core for the first year focused on gathering and systematically analyzing hospital discharge data from the 24 European countries (representing 53% of the European population and 85% of the EU-25 population) that agreed to participate in this core project as consultants. Computerized procedures were developed to enhance the country-based injury researchers to use and enhance this data by creating additional variables to characterize injury severity and injury indicators. It also focused on the developed on a web-query system from which these data are easily available.

2.2 Description of work

All activities have been conducted by the University of Navarra team unless stated otherwise. In regards to WP2 core activities and, following a chronological order, we have:

1) Held 2 in-person meetings with project participants. The first one was on December 8, 2005 (month 1 of the proposal) in Luxembourg. The second one was on June, 26, 2006 in Vienna. Approximately 20 and 10 participants attended each meeting, respectively
2) Created an e-mail distribution list including all participating countries, APOLLO´s secretariat (GR), and the DG SANCO representatives Mr. Kloppenburg and Mr. Ryan. This distribution list was the venue for electronic communication during the year. In particular, monthly progress e-mail reports where sent from December to June 2006, and then resumed in October 2006. Since mid October communications have been sent out almost weekly, although personalized messages have also been used since then to better customize messages to the different situations of different partners.
3) Created a web-based working space: www.unav.es/preventiva/apollo/asistente. Participants were given user names and temporary passwords (which they got to customize upon first use) to access a working bench where information on WP2core activities is continuously updated. Also, spaces for uploading/

downloading of working files and data files were created. A forum for discussion (or Bulletin Board) was also created and monitored regularly. Last, a general query e-mail address was set up (and monitored daily) for communication: apollowp2core@unav.es

4) Development of a workplan that was consolidated with that of other WP2 subprojects and the rest of APOLLO work packages under the supervision of the Greek team.
5) Completed country enrolment for WP2 core activities. 24 countries agreed to participate: Austria, Belgium, Bulgaria, Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Ireland, Italy, Latvia, Malta, the Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Turkey and the United Kingdom. With the exception of Bulgaria, Norway and Turkey, all other 21 are members of the European Union.
6) Developed a telephone-based questionnaire to assess health data systems with potential for injury epidemiology and control at national level.
7) Scheduled and conducted 23 one hour long telephone interviews with the 23 other participating members (the data for Spain was readily available to Dr. Segui-Gomez) to understand their data sources availability and injury-related content. Answers were transcribed in word documents and then reviewed by interviewees for approval. Compiled answers in an Excel sheet for project management purposes. Compiled findings into a poster presented in 1st European conference for injury Control in Vienna (June 2006) and are now being summarized into a manuscript to be submitted to a peer-reviewed Journal. Target deadline for submission: January 2008
8) Conducted a literature review to identified reported injury indicators in the scientific and policy communities as well as indicators requested or proposed by international bodies such as the European Core Health Indicators (ECHI) group. Identified some 90 "concepts" used as indicators, although when age and gender breakdowns are considered, the list amounts to some 250 indicators. Compiled them into a document where identification and definition information was summarized together with an assessment of some of their properties. This document was shared with WP2 core participants to identify the top 10-preferred ones to include in paper report. This review has been summarized in an abstract accepted for oral communication and presented at the 134th annual meeting of the American Public Health Association in Boston, November 5-8, 2006. We are planning to produce a manuscript summarizing this review to be submitted to the peer-review literature too. Target deadline for submission: Spring 07
9) Communicated with Dr. Peter Kramers (ECHI group) to provide information on project in preparation for additional ECHI proposals and future work
10) Created a step-by-step guideline for WP2 participating members to move through the process of gathering and analyzing their data. This step-by-step guideline was summarized as a power point presentation with audio which was sent to all collaborators.
11) As described in step-by-step guideline, during year 1 of the project participants were to secure Census and Hospital Discharge Data for year 2004 (2003 for some countries). The steps any given country had to conduct can be summarized as follows:
    a. Get the data (using inclusion/exclusion set criteria and never including personal identifiers)

b. Upload data in web site for additional technical support (if necessary)
c. Quality check
d. Augment Hospital Discharge Data to produce categories of injuries using the Barell Matrix
e. Augment Hospital Discharge Data to produce severity measures
f. Augment Hospital Discharge Data to produce numerators for indicators
g. Run frequency distribution analysis
h. Upload counts derived from frequency counts onto web site

12) In order for these augmentation and frequency distribution counts to be made, at the University of Navarra we had to create computer programs that would standardize such procedures. Each country needed to use 5 different computer programs, but because some experts use one of two statistical software packages (STATA or SPSS) and because the hospital discharge data can have diagnoses coded in ICD-9-CM or ICD-10 depending on country, we had to make available 20 different computer programs. We had to create 22 of this programs since only 1 was already available –the one to map ICD-9-CM into AIS1990. Each of these programs is now available at the project's website. They are for free distribution although they are copyrighted. Besides WP2 core participants, we know of at least, 5 other researchers (in Spain, Israel, New Zealand, Australia, and the US) who have requested and received the software for their use.
13) Responded to survey from EU DG SANCO on issues related to privacy protection and use of health-related data for the project
14) Developed a web-based query system where the counts derived from the analyses indicated above are presented in combination with census data to allow for indicator computation. This web-query system has been built after consultation with experts from EU-ESTAT and other injury-related web-query systems around the world, such as the APOLLO leader's web-query system on fatal injury data, or the US- CDC National Center for Injury Control and Prevention WISQARS system. The web query system is compatible with other health-data web query systems. Besides the above mentioned consultations, we have performed demonstrations of the system while it was being built (for comments and suggestions) with WP2 core participants (at the Vienna meeting), DG SANCO representatives Mr. Ryan and Mrs. Sponne. It has also been shown to representatives from the Spanish Ministry of Health (Dr. Robledo) and the Ministry of Interior (which oversees the Traffic Safety Directorate) (Dr. González-Luque). While the system in being built, it is housed at the project's website (www.unav.es/preventiva/apollo/asistente), although the plans are to open it for general public by mid-January 2007. For the time being, interested parties can access the work-in-progress site using the username "public" and the password "public".
15) Made the web-query system work-in-progress know to researchers funded under DG SANCO working on a "Burden of Disease in Europe" atlas and led by Dr. Vittozzi (project EUROGLEH)
16) Uploading of data counts on web-query system as provided by participants. Since these are aggregate data, the web-query system is in full compliance on all personal identification protection regulation in place.

17) Completed processing of census and hospital discharge data for Spain and Hungary. Currently, assisting Norway, Austria, Bulgaria, Denmark, Malta and Slovenia as they are working on the data. In correspondence with all other countries to assist as/when needed.
18) Presented oral communication summarizing the project and the web-query system at the International Collaborative Effort on Injury Statistics forum, a network of injury-related researchers from around the globe that met on September 7-8, 2006 in Washington, DC.
19) Attended APOLLO leadership teleconferences (3 to date, 1 cancelled for technical problems) and in-person meeting in June 2006.
20) Produced interim 6-month progress report as well as current report.
21) Processed payments of consultants as their work has been completed.
22) Produced and submitted a continuation proposal under the 2006 Call for proposals to expand on the hospital discharge data work and built similar strategies for national health interview data, occupational injury data, and disability data. According to unofficial reports, the proposal was not funded for lack of evidence of current progress.

As instructed at the beginning of this section, below follows an update on the status of our progress in regards to the output indicators proposed in point 1.5 of Annex I of contract. Please note that these output indicators were written for the APOLLO project at large. However, we are providing the numbers that related to progress within WP2 core.

Output indicators title	**Target value to achieve (as listed in contract)**	**Value achieved in WP2 core as of November 30, 2006 (end of year 1)**
OBJ1: Number of countries covered in the burden of injuries	20	24
OBJ2,3: Number of severity indicators built	5	90 (or 250+ as explained above) as derived from literature
OBJ4: Number of inputs built in the selinkage	6	N/A
OBJ5: Number of success factors in best practices	10-20	N/A
OBJ6: Number of recommendations	10	Still under development
OBJ 7: Number or dissemination materials produced (prototypes)	5	2 interim progress report, 8 documents, abstracts or presentations, 22 computer programs, 2 web-sites (working area and web-query)
OBJ8: Number of dissemination activities organized	4	Besides presentations in professional meetings, 5 in person meetings organized by WP2 core and numerous e-mail contacts
OBJ9: Number of applicable primary research fields	3	N/A
OBJ10: Number of attendees in meetings	30	WP2 working meetings: approximately 30 In presentations at professional meetings, in aggregate some 200+

Also, doing the same exercise with the 17 activities indicators listed in point 2.2 of Annex I of the contract, but focusing on those explicitly linked to WP2:

Indicator title	**Target value to achieve**	**Value achieved in WP2 core as of November 30, 2006 (end of year 1)**
WP2: Review of literature articles	50	Independently on what other WP2 subprojects report, we have reviewed some 35 articles
WP2: Discussions with national experts	10	Independently of other WP2 subprojects , we have held discussions with, at least 27 (23 partners besides ourselves, potential partners in Switzerland and Luxembourg, 2 experts in Spain)
WP2: Testing of specific severity indicators	5	Independently of the WP2 subproject led by Dr. Pitidis, we are computing and producing several injury indicators based on: AIS, ISS, NISS, SRRs, and length of hospital admission
WP2: Development of computer algorithms for data analysis	3	Independently of what other WP2 subprojects produce, we have made available 24 programs

Despite the fact that at the time of the proposal submission the proposed timeframe for these activities was never narrowed down from the 3-year span of APOLLO activities, once the project was approved and started (December 1, 2005) we proposed to conduct all WP2 core related activities in a 14-month time frame (see work plan submitted by APOLLO leaders). As illustrated by table below, all above activities have been conducted within their proposed deadlines, except for the data analysis at the country level, which is still ongoing.

Project Timeline Start date Dec 1, 2005

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	…	33	..	36
APOLLO	S	…																C
WP2	S	…														C		
WP2 "core"	S	…												C				
Close country enrollment	S	…																
Selection of indicators	S	…	C															
Develop web as tool for project management	S	…																
Develop dummy burden report			S															
Develop analyses routines	S	…																
Data analyses		S	…							C								
Web based query system				S	…									C				
Burden report review										S	…			C				
Meetings	X						X					X						
Telephone/e-mail contacts with subcontractors	S	…																C
Telephone/e-mails with subprojects	S	…																C
Final report																S	..	C

S= Start, C= Completed

Last in this section, we will cover progress related to the overall coordination of WP2 activities with the subproject leaders:

1. Included subproject leaders in WP2 e-mail distribution list and communicated with them every progress made
2. Invited all subproject leaders to the two in-person meetings celebrated to date

3. Suggested that they provide monthly progress report on e-mail basis
4. Maintained sporadic contact as needed
5. Re-sent all APOLLO initiated request for contributions towards development of work plan, 6-month report and interim (12-month) report
6. Assisted in change of leadership in Wp2 subproject formerly led by Dr. Frangakis who, due to professional-related matters, can no longer be part of APOLLO. Drafted documents to summarize tasks to be done. Participated in negotiations to transfer leadership to Dr. Petridou

2.3 Results

In order to ease the assessment of the results, we will follow the same order presented in the previous section, although there may be parts of the work for which the results are self explanatory:

1. The in-person meetings have been most useful to present WP2 core objectives and working strategies to (prospective) collaborators. It has also helped create a sense of network between researchers. Documents were prepared in advanced to the meetings, as well as an agenda and collaborators or interested parties who could not attend could access those via the working website. Also, minutes for the meetings were taken and summarized in power point presentations that every participant could download from the web. The second meeting was particularly useful in regards to discussing the progress of the project to date. In particular, we had an interesting discussion on the indicators review and on the development of the web-query system. Participants were shown the web-query system as it had been developed by then. Their suggestions were incorporated in the meeting. Participants who could not attend the meeting were sent a request for comment on the indicators review and the web-query system via e-mail and they answered as they saw fit.
2. Although the distribution list has proven less useful than anticipated because of the fact that some e-mail servers are detecting such messages and cataloguing them as SPAM, we are satisfy with this tool since it allows for quick and efficient communication in a project such as ours with (thankfully) a very large number of collaborators. The monthly progress reports were positively received by many collaborators (at least to those who have expressed such feelings). We have received no negative comment neither on the use of the distribution list nor in the content of our messages.
3. The web-based working space is the key to the development of the project. It has centralized all documents, data files, and databases as well as provided a depository for all our activities. In regards to the transfer of data files this is particularly helpful since the web environment allows for secure transfer protocols (https://) to enhance the safety in the system. The web-based working space has been particularly valuable since the 24 collaborating partners reside in 24 different cities and it has also facilitated the work of the Universidad de Navarra team, since its members travel frequently and the project director resides in a city other than Pamplona.
4. The development of a work plan was a very useful tool at the beginning of the project to allow for detailed consideration of the tasks ahead, the development of a project timeline, and to assign responsibilities
5. The country enrolment process has been very successful as evidenced by the 24 participating countries. Even when considering that for 2 of them the data uploaded onto the web-query system will be slightly different from that of others

due to the impossibility of used patient-level records, having rather homogeneous data for 22 countries should be a major advancement to the current situation. We tried to engage 3 additional countries: France, Luxembourg and Switzerland, although for a variety of reasons this was not possible.

6. The development of the telephone-based questionnaire to assess health data systems was key for a successful round of interviews. Participants were sent the interview via e-mail ahead of the scheduled telephone call to allow them to prepare their answers.
7. The 23 one hour long telephone interviews resulted in two primary products. Most notable the answers regarding data sources availability and injury-related content (more on this below). But also, in developing good personal trust between the participating members and the Universidad de Navarra team. In regards to the results of the survey, the annexed documents provide a more detailed answer, but in short, we learned that all 24 countries have almost complete population coverage hospital discharge level (with the exception of Bulgaria, that has a 40% sample), that all but 2 of them have access to patient-level records (Greece and Germany only have access to aggregated data), that all but 4 of them had access to 2004 data (the others have access to 2003 or 2002), and that 19 of them have diagnoses information coded in ICD-10 (the other 5 –Spain, Portugal, Ireland, Belgium and the Netherlands use ICD-9-CM. We also learned that the majority of these countries have national health surveys with some questions related to injuries and we got transcripts with those questions to compare them. Even though several collaborators are in countries with IDB systems (in place or in pilot or in planning stages) few of them considered this systems to be representative of their countries or comprehensive in the scope of injuries that the system recorded. Last, many countries have occupational- and disability-related databases that contain injury-related questions. In addition, learned that most collaborators had little experience with the exploitation of these databases. We also learned that most researchers wanted to keep the analysis in house (keeping up with the capacity building argument of the proposal) and that they would either the work themselves or delegate in a staff member. They need computer programs to be compatible with either the SPSS or STATA statistical software packages which they have in their work settings.
8. The literature review proofed challenging and stimulating at once. It was very good that we conducted this review and that we did it early in the process since the definition of numerators and denominators was key in the development of the computer programs to compute them. The review was conducted from the broadest possible perspective. That is, we included all injury-related indicators presented in scientific papers, professional reports or EU-level documents regardless of whether they related to fatal or non fatal injuries or whether they were about intentional or unintentional injuries or whether they centered around health outcomes or injury descriptors or whether they included behavioural components. When it boils down to the indicators that one can apply to hospital discharge data we came down to about 28 which were specific enough to be workable and that we programmed for the web-query system. We left out indicators that were too vaguely defined in the literature since the goal of this core project was not to develop new indicators but to use existing ones. The decision of which ones to present in a paper-based Atlas on the Burden of Injuries report was presented to Wp2 collaborators and APOLLO WP leaders but only two experts (besides the staff at the Universidad de Navarra) have provided specific

suggestions. The 10 selected indicators are (listed in abbreviated ways): injury-related hospital discharge rates, percent injury discharges with mechanism of injury information, motor vehicle hospitalization rates, suicide and suicide attempt hospitalization rates, drowning and near drowning hospitalization rates, consumer and leisure-related hospitalization rates, hospitalization with MAIS>=3, trauma brain injury hospitalization rates, long bone fracture hospitalization rates, hospitalization rates of injuries listed under the Global Burden of Diseases project. Regardless of the identification of specific indicators, we believe one of the most interesting results of this review is the fact that the term "indicator" seems to be replacing what previously was referred to as measures of injury. More importantly, if one were to strictly evaluate whether many of these measures are indeed indicators (or in other words what the literature suggest are attributes of a good indicator) one would find that they are not. These thoughts are the core of the presentation at the professional meeting and the paper that we presented in the previous section regarding this point.

9. The communication with Dr. Peter Kramers (ECHI group) was an opportunity to let other EU researchers know about this project, although no follow up on his part or the ECHI group had occurred yet.
10. The step-by-step guideline provided an e-learning tool for project participants to have direct and specific instructions on what was expected from them and how was it to be done.
11. The steps outlined in the guide above provided a structured and consistent environment in which all data from all countries is to be analyzed. It also resulted in producing aggregate counts which can then be uploaded into a web-query system in a manner completely consistent with patient data safety requirements
12. The software produced is the backbone of this project. Without it every researcher would need to spend many hours of programming time to be able to generate the proposed indicators. These programs are written to ensure consistency between software versions (SPSS and STATA) and between data coded in ICD-9-CM and ICD-10. The complete list of software produced can be seen in Appendix II.

They are also written in concordance with comparable software written by the US CDS National Center for Health Statistics for SAS computer language. The two pieces of software most solicited to date by third party researchers are those related to the construction of the Barell Matrix and the transformation of ICD-10 codes into AIS1990 codes.

1. No particular result was driven from responding to the survey from EU DG SANCO on issues related to privacy protection, except providing information on the project and its compliance with existing regulations
2. The development of the web-based query system is one of the deliverables of the project. The breath and depth of data to be uploaded and the user-friendliness of the site are of utmost importance to us. Also, whether researchers from around the world become aware of this site and the potential of the data for their works. The site will not be considered completed until month 14 of the project, since we are still programming tools to ease navigation and consultation of the data. We still have to program a count hit to monitor the number of visits to the site. The comments provided by the experts with whom we have shared it have been most helpful. One of the most striking features of the site is that it

allows customization of gender and age categories for all indicators – interestingly, age can be broken and 1-year to allow researchers to gather the data they really need for their purposes. Mr. Ryan, in our in-person meeting on October 12, 2006 agreed that this site should be linked with ESTAT. At the Spanish level, both the Ministries of Health and Interior have agreed to link with it. We are hoping that when the site is finished and all participating countries upload their data, they will take it to their country-level institutions for similar arrangements. In addition, we are in talks with several injury-related organizations and networks of experts to link the site with theirs.

3. We are not aware of any specific result after our e-mail to the lead researchers of the EU funded "Burden of Disease in Europe"
4. The uploading of the data from Spain and Hungary has allowed several things. Firstly, it provided a realistic look to our demonstrations of the system. Secondly, it encouraged national representatives from both countries to take interest in the project. Thirdly, it encouraged Hungarian collaborator, Dr. Bényi to continue working with hospital discharge data. In fact, she is now processing the 2005 data and it will soon be uploaded into the system.
5. The continued assistance to collaborators helps ensure progress is being made by all participants. In our most recent inquiry, we heard from everybody but Belgium, Italy, and Ireland.
6. The presentation at the International Collaborative Effort on Injury Statistics forum provided us with great feedback and an opportunity to disseminate the existence of the project and the products available.
7. Attending APOLLO leadership teleconferences helped monitor the progress of the overall project and to identify areas that deserve special attention.
8. Producing the reports is always a healthy exercise to evaluate whether all objectives have been achieved.
9. Processing payments in time for professional services provided is a good management tool to keep the project moving.
10. Although it was not funded, producing the continuation proposal under the 2006 Call for proposals allowed us to test the willingness of our current partners (and new partners) to engage in more work (which they are willing to do), allowed us to think on how to expand the current project to other national health datasets, and opened the possibility to have 3 of our current collaborators as associated beneficiaries of the project (Norway, Germany and Denmark). We hope to be able to refine the proposal and resubmit it under the 2007 call for proposal and trust that the current report will ensure that fair recognition to the work conducted to date is done.

Also, last in this section, we will cover the results related to the overall coordination of WP2 activities with the subproject leaders:

1. Including them in the e-mail distribution list ensures continued and up-to-date information on our wp2 core activities
2. The invitation resulted in at least two of them attending both meetings
3. The suggestion that they provide us with monthly progress report on e-mail basis was only sporadically followed by Drs. McDaid and Skalkidis
4. Contact during this year has been very sporadic with regards to their progress. This is part related to the fact that four of them had start dates on months 4-8 of

APOLLO. A fifth one, the subproject led by Dr. Frangakis has been complete shifted. Under current direction by Dr. Petridou the project is meant to start on January 1, 2007. Maintained sporadic contact as needed

5. The forwarding of all APOLLO initiated request for contributions towards development of work plan, 6-month report and interim (12-month) report has resulted in timely and complete reports, and
6. The participation in the change of leadership from Dr. Frangakis to Dr. Petridou has helped ensured the goals and objectives are retained.
7. Although there was no specific evaluation component built in APOLLO, we believe evaluation of WP2 core activities is being done, at least, at 3 different levels:

a) At the participating expert level. They more than anyone know what work is involved in the project and how the project is being handled. They have provided feed back on a voluntary basis, and this feed back has always been positive. Another example of their evaluation is that they all were happy to participate in another round of the project, as it was planned in the continuation proposal submitted in the 2006 call.

b) At the injury expert level. Presentations in professional meetings and submission of manuscripts to the peer-reviewed literature are another form to test the project. Although until know we only have had time to do the presentation component, the feedback so far has been very positive. Particularly in regards to all the software developed to enhance capacity at the country-specific researcher level as evidence by the fact that the software is being used by third parties already.

c) At the EU DG SANCO level, as they review the current interim report

2.4 Promotion/dissemination

Within the first year of the WP2 core project, we have undertaken numerous promotion/dissemination activities. In every one of them, we have acknowledged partial funding from the DG SANCO under contract 2004119. All of the promotion/dissemination activities have been presented in the previous section, but for the sake of summary, we will list them again. We will concentrate the presentation to promotion/dissemination activities outside the circle of APOLLO-participating parties or the DG SANCO officials who oversee our activities. For the sake of completeness and consistency, we summarize these activities following the dissemination objectives presented previously although we expand the table with one column to describe the materials in more detail and in a manner consistent with their description in the first section of this document too.

Selected Output indicators -- those related to dissemination	**Target value to achieve (as listed in contract)**	**Value achieved in WP2 core as of November 30, 2006 (end of year 1)**	**Description as per in previous sections**
OBJ 7: Number or dissemination materials produced (prototypes)	5	2 interim progress report	Interim 6-month progress report as well as current (12-month) report (Although some may consider this internal communication, we do not since these are official reports that can be seen by anyone who so requests it)

		8 documents, abstracts or presentations,	Findings from the in-depth in-person interviews to assess data source availability in each country were summarized into a poster presented in 1st European conference for injury Control in Vienna (June 25-26 2006) Considerations upon completion of the indicator review have been summarized in an abstract accepted for oral communication and presented at the 134th annual meeting of the American Public Health Association in Boston, November 5-8, 2006. The literature review on indicators is compiled them into a document where identification and definition information was summarized together with an assessment of some of their properties. This document can be downloaded from the project's website. Presented oral communication summarizing the project and the web-query system at the International Collaborative Effort on Injury Statistics forum, a network of injury-related researchers from around the globe that met on September 7-8, 2006 in Washington, DC (The other four documents are for internal communication with WP2 core participants)
		22 computer programs	We created 22 programs since only 1 was already available –the one to map ICD-9-CM into AIS1990. All of these programs are now available at the project's website.
		2 web-sites (working area and web-query)	Developed a web-based query system where the counts derived from the analyses indicated above are presented in combination with census data to allow for indicator computation. www.unav.es/preventiva/apollo/asistente/ (The second website is the working area one, which we consider internal to the project for the purposes of this section)
OBJ8: Number of dissemination activities organized	4	Besides presentations in professional meetings,	See above
		5 in person meetings organized by WP2 core	Meeting with Spanish Ministry of Health representatives Meeting with Spanish Ministry of Interior –Road Traffic Safety Directorate representatives (Two other meetings were with WP2 core participants and a third meeting was with DG SANCO representatives, thus we consider it internal communication)
		and numerous e-mail contacts	Communicated with Dr. Peter Kramers (ECHI group) to provide information on project in preparation for additional ECHI proposals and future work Responded to survey from EU DG SANCO on issues related to privacy protection and use of health-related data for the project Made the web-query system work-in-progress know to researchers funded under DGSANCO working on a "Burden of Disease in Europe" atlas and led by Dr. Vittozzi

Last, but not least importantly we propose counting the continuation proposal submitted under the 2006 Call as another dissemination product since, supposedly, 3 reviewers need to evaluate submissions. These experts are, in turn, exposed to the current project's goals and products.

2.5 Next steps

During the second year of WP2 core activities, we will concentrate on the following (listed in no particular chronological order):

- Continue monitoring participating countries in their analysis and uploading of 2004 hospital discharge data.
- Performing analysis for those countries who cannot do them themselves for lack of time
- Uploading of all analyzed counts onto the web-query system
- Establishment of the web-query system as a stand-along website (currently it is part of the APOLLO WP2 core working web site) and link it to as many institutions/web-query systems as possible
- Develop the Draft of burden report with 10 selected indicators, this is the other WP2 core deliverable as defined in our contract (the other is the web query system). This draft will be circulated for comments among Wp2 core participants. When a final report is selected, we will proceed with the development of a PDF report that will be available from the project's website. The report will be in English. Participating members will be able to take the report and translated it in the languages of their interest at their own expense. Mr. Ryan suggested in our last in person meeting that DG SANCO will cover paper production of the English report.
- Complete our work on the manuscript summarizing the existing injury data sources. This manuscript will include recommendations for future actions.
- Complete our work on the manuscript summarizing the review of injury indicators and their performance according to strict indicator criteria
- Start and complete work on a manuscript summarizing the burden of injuries in the WP2 core participating countries using 2004 hospital discharge data
- Investigate and report on burden of injuries using data from national health interviews in the WP2 participating countries that have them
- Evaluate and submit a continuation proposal similar to the one we submitted in 2006
- Conduct an assessment on burden of injuries among participating countries using national health interview data.

In regards to the integration of WP2 core products into other APOLLO work packages, we will work on:

- Communicating with WP6 to ensure adequate coverage of WP2 core findings is provided. In particular, we will work towards the goals of: 1) ensuring that one of the Fact Sheets to be produced include indicators as available on the web-query system and that it showcases the web query system, and 2) ensure that work with NGOs and other organizations interested in injury control and prevention includes references to the data gathered under WP2 core
- Facilitating data on road traffic victims to WP5

In regards to the activities of other WP2 subprojects, which will be in full production stage during this time, we will:

- Continue to assist subproject leaders in relation to the progress of their projects and the integration with each other and with WP2 core activities

Last, but not least importantly, in regards to the overall progress of APOLLO, we will continue our participation in APOLLO leadership meetings and in the preparation of the next (2-year) interim report.

Work Package 2.1: Subproject: The economic consequences of injury
Report drafted by Dr. Mulder

Note: This subproject amounts to 19% of the WP2 total budget and is responsible for one of 7 WP2 deliverables: D2.4 Tools, including software for computing direct costs of injuries

2.1.1 Introduction

The aim of the project is to support EU countries in calculating the economic consequences of injury for purposes of priority setting in prevention.
The objectives of the project are:

- Making electronical tools available to support EU countries, including the 10 new member states, in assessing direct medical costs of injury with a uniform methodology.
- Exploration of methods and data to support EU countries, including the 10 new member states, in assessing indirect costs of injury with a uniform methodology.

For the first year it was planned to have draft guidelines (on paper and electronically) ready for calculating direct medical costs. It was also planned to have contact with 10 countries who might be involved in the actual calculations.

2.2.2 Description of work

A model for the assessment of direct medical costs of injury has already been developed. The model is based on hospital-based surveillance systems (Injury Data Base, IDB and Hospital Discharge Register, HDR) and enhances the value of these systems for purposes of priority setting.

The methodology developed by the EUROCOST project (Grant Agreement Numbers: S12.299105/2000CVG3-19 (Phase 1) and SPC 200.2228 G(02) (Phase 2)), including the steps to further harmonize the surveillance data, will be used to support EU countries to calculate the direct medical costs of injury (and subdivisions), by making it available on the internet.

The project team has ‘translated’ the method used for EUROCOST into draft guidelines in a way that is useful and usable for EU countries to actually calculate the direct medical costs. Several issues were included in the guidelines:

- Compatibility of country specific data with the EUROCOST model

- Overview of the data systems that can be used (baseline model minimum sets and modules)
- Overview of the information that is available (in the data systems) by country with respect to incidence (accident groups, injury groups) health care consumption (cost elements, healthcare sectors) and unit costs of health care
- Selection and classification of injury patients
- Classification of accident and injury groups
- Which determinants of health care consumption can be operationalised?

- Quality assessment of country specific data
  - Representativeness
  - Coverage
  - Validity

- International harmonisation of data
  - Tools to harmonise the available surveillance data between countries
- Unit costs
  - Calculation method for comprehensive unit costs per country

This lead to the following contents of the guidelines:
1. Selection of data sources on injury incidence and health care consumption
   - 1.1 Inventory of data availability and quality
   - 1.2 Selection of data sources for the cost calculations
2. Adaptation of selected ED and HDR data to structure of APOLLO model
   - 2.1 Definition of injury; inclusion and exclusion of patients
   - 2.2 Classification of injury groups
   - 2.3 Classification of accident groups
   - 2.4 Health care information
   - 2.5 Extrapolation of ED data
   - 2.6 Linkage of ED and HDR data
3. Calculation of unit costs
4. Cost calculations with APOLLO model

The contents are based on several discussions within the project team (Consumer Safety Institute and Erasmus Medical Center) and people from the Consumer Safety Institute who might be the ones to actually apply the guidelines.

2.2.3 Results

The draft guidelines are finalised and agreed upon as far as face value is concerned. The guidelines will be reviewed by experts and then actually applied (in 2007) by 10 EU Member States.

The first rough outline for the electronic tool was drafted. This tool will be published on the WP-AI website and can be used by the EU Member States to calculate the direct medical costs of injury.
Ten Member States will be involved in testing the guidelines and to actually calculate the direct medical costs due to injuries in their country. The 10 counties will be selected based on the information available on hospital discharge data (HDR) and treatments at Emergency Departments. Within the core project of WP-2 data is being

collected on HDR. Therefore it is currently discussed what data can be used from the core project. If that discussion is finished, the actual countries will be selected.

2.2.4 Promotion/dissemination

The draft guidelines are only distributed to the experts that will review them. They will only be distributed to participating countries once the experts have agreed upon the contents of the guidelines and once the guidelines were tested on Dutch data. The electronical tool will ultimately be freely distributed by means of the website of EuroSafe.

2.2.5 Next steps

Next steps within the project:

For the direct medical costs:

- The methodology (including data codes and scripts) will be made available through internet.
- 10 EU-25 countries will be involved in the project.
- Workshop for researchers from participating countries on how to compute costs of injury.
- The available uniform method to assess direct medical costs of injury in Europe will be applied by the data processors to the surveillance systems of their own country.
- The participating countries will evaluate the applicability of the methodology and deliver the results of their analyses in predefined tables, defining the minimum data delivery.

For the indirect costs:

- Inventory of available data sources in the participating countries that could potentially be used for calculating indirect costs. A state of the art description will be produced on measuring indirect costs of injury in Europe.

Final report (month 31)

- Final report, summarizing the economic consequences of injury. This includes a new improved estimate of medical costs of injury in the whole European Union.

Work Package 2.2: Subproject: Assessment of Injury Severity in Europe

Report drafted by Dr. Pitidis

Note: This subproject amounts to 8% of the WP2 total budget and is responsible for one of 7 WP2 deliverables: D2.4 An analysis of the best strategies to measure severity of injuries

2.2.1 Introduction

Those first six months of the injury severity assessment module have been dedicated to the drafting of a review report on the state of the art of trauma severity assessment methods.

2.2.2 Description of work

Our analysis starts from the consideration that a precise description of the injury and its damages is necessary for clinical and epidemiological aims, more in general we

can name them evaluation purposes. The need for a common language in trauma description has led through the years to the development of trauma dictionaries based on two fundamental language approaches: specific for trauma and non-specific.
In the first category we can include the Abbreviated Injury Scale (AIS) method and the assessment methodologies deriving from it, in the second group we can include the methods based on the International Classification of Diseases (ICD) system.
The construction of a common dictionary for trauma description fulfils two fundamental needs, on one hand it consents to describe accurately and unequivocally a determined trauma typology, on the other hand it defines an information base for the development of injury severity indicators. This last item in particular interests us in our analysis.

In the AIS system the severity score attribution is based on the agreement among groups of experts. This severity scale is based essentially on the opinion of the clinicians and other experts that developed it. It can be defined, then, a subjective iso-severity patient classification system.

Nevertheless, theoretically such an indicator should be an objective measure of a well determined outcome such as the survival probability or the disability level. It should be an indicator predictive of outcome expressed as individual or population health status measure (i.e. mortality or morbidity probability rate) or health care productivity measure (i.e. inpatient length of stay or average cost).Concerning clinical outcome an injury can be described on two basic dimensions: anatomical damage and physiological consequences. Using a simplified scheme, the main variables determining the outcome can be included, as Osler indicated, in the following model:

OUTCOME = f(A, F, H) (1) where:
A= ANATOMICAL DAMAGE
F = PHYSIOLOGICAL DAMAGE
H= GENERAL HEALTH STATUS

The concrete functional form of the model depends obviously on the measures effectively used. The outcome more immediate measure is the survival (death) probability. Physiological consequences of trauma can be measured by dedicated scales such as Revised Trauma Score (RTS). The anatomical damage can be measured i.e. by the AIS method and its extension to the whole patient: the Injury Severity Score (ISS). With regard to the pre-existing health status of the patient a proxy variable generally used is the age of the patient, in the hypothesis that that it is a fundamental component of his general health status.

Until now we have discussed about objective or subjective methods expressed by mean of indexes of scales considering the validity of such indicator in terms of predictive capacity of the outcome. We investigated the relationship between severity indicator (i.e. ISS score) and outcome measure (i.e. mortality rate), but the trauma severity level can be directly expressed by mean of an outcome measure. An example can be indicated at least two methods measuring the severity of trauma directly by mean of a survival probability. The first one is the TRISS method (Trauma score, Injury Severity Score, age combination index) that combines all the outcome determinants considered in the above indicated model: ISS as anatomic measure, RTS for physiological damage, age as proxy of the general health status of the patient (physiological reserve). The basic idea of this indicator is using simultaneously health

status measures describing different aspects of the damage for having a greater accuracy in outcome prediction than each single dimension measure alone.

In the TRISS method you start from anatomical and physiological measures of trauma severity for estimating their relationship with the survival probability in a determined population and then using that probability as measure of global injury severity. Even though the survival probability can be used in itself for directly for grading the different levels of severity of a determined pathology without necessarily calculating its relationship with anatomical and physiological damage. That is the Rutledge idea for ICISS (International Classification of diseases-9 Injury Severity Score) indicator that assesses the trauma patient severity as product of the survival probabilities calculated for each ICD-9-CM diagnosis as survival rate observed in a wide study population.

2.2.3 Results

In conclusion we have examined two fundamental approaches for injury severity assessment, the first one based on injury description languages specific for trauma, the second one referred to universal languages used for the description of every kind of pathology. The first approach is very costly for the necessary training of specialized codifying personnel, the complexity of clinical instrumental information to be registered, the volume of information to collect and elaborate. The universal languages based systems have normally a lesser information costs. That difference has determined the development of two main evolution paths in the patient injury severity classification systems.

On one side a year 1980 population study by Champion calculated the real death probability for each HICDA-8 (Hospital International Classification of Diseases) codified diagnosis by mean of the analysis of correlation among lethality and ICD based severity scores. That study opened the way to systems based on routine clinical information currently registered, with trauma severity levels attributed directly on the base of observed outcomes, ICISS index is the most recent of them. Those systems have a good outcome predictive capacity and a fundamental advantage: can be applied on current existing clinical data. That intrinsic advantage has led some researches to follow a second approach in injury severity assessment, simply consisting in the development of a conversion dictionary among ICD-9 and trauma specific severity scores such us AIS. After many attempts the introduction of ICD-9-CM incremented the diagnosis description specificity consenting to Mackenzie the development of an ICD-9-CM/AIS-85 conversion table. Nevertheless because of the lesser diagnosis description specificity of ICD than AIS there is a high discordance among manually calculated and automatic (conversion table based) severity scores for abdominal internal organs and internal head, face and neck injuries (52% of non appropriately assigned scores). In our study we will make a selection of indicators to be applied to European data and try to improve existing methods.

2.2.4 Dissemination/Promotion

To date, there has not been any dissemination or promotional activities.

2.2.5 Next steps

Unfortunately, the next term’s steps have not been provided for this interim report.

Work Package 2.3: Subproject: Evaluating Exposure Indicators
Report drafted by Dr. Seguí-Gomez - on behalf of Dr. C. Frangakis and Prof. E. Petridou.

Note: This subproject amounts to 12% of the WP2 total budget and is responsible for one of 7 WP2 deliverables: D2.5 A questionnaire to collect data for at least one new indicator on exposure

2.3.1 Introduction
The objective of this project was to do a through investigation in the ways exposure indicators are currently used in monitoring injuries in Europe and to propose a couple of alternative or complementary exposure indicators that would enhance the current situation. This is a 24 month long project and during its first year, it was planned that the literature review would be completed, together with the development of a pilot questionnaire to be tested both in Greece and Austria during this year too. Analyses of the pilot data should have been started.

2.3.2 Description of work
No work has been conducted to date due to the difficulties of Dr. Frangakis, formerly in the Greek team and proposed leader of this subproject, to be able to pursue his interest in this matter. Dr. Frangakis moved to a different position during the long months that the APOLLO negotiations took. After exploring several alternatives, Dr. Petridou (EL) agreed to retain the project under the Greek leadership and proceed with it as planned, with the only exception of the change in leader. Because the project was a 24 month long one, there should be absolutely no problem in completing it within the remaining APOLLO calendar.

2.3.3 Results
None to date

2.3.4 Promotion/Dissemination
None to date

2.3.5 Next steps
As indicated above, work is schedule to begin on January 1, 2007.

Work Package 2.4: Subproject: Systematic Review on Costs and Effectiveness of Strategies to reduce the socio-economic cost of injuries and the potential for implementation in different context and settings across Europe
Report drafted by Mr. McDaid, LSE, UK

Note: This subproject amounts to 14% of the WP2 total budget and is co-responsible (together with the next subproject) for one of 7 WP2 deliverables: D2.4 Report on efficient strategies to reduce burden of injuries in Europe

2.4.1 Introduction
The principle tasks thus far have been to undertake work focuses on the socio-economic impact of injuries, both intentional and unintentional, primarily in Europe, but also in other parts of the world where relevant. Specifically there are two initial components of this work.

1) Undertake a systematic review to develop a literature map to identify what is known about the social and economic costs and consequences of injuries, as well as the methods used to estimate these costs.

2) Undertake a systematic review to map what is known about the cost effectiveness of strategies to reduce the socio-economic costs and consequences of injuries in Europe and elsewhere.

The third component of work which builds upon the first two modules is to

3) Drawing on information from these systematic reviews as well as work undertaken elsewhere in WP2 looking at the health care system related costs of injuries to explore the economic costs of implementing effective strategies in different settings and contexts across Europe. This may include some threshold analytical modelling to identify key factors in different settings that may impact on the potential cost effectiveness of strategies.

Please see Appendix II to view the rationale of this subproject and systematic review protocol.

2.4.2 Description of work

Electronic search strategy

Initial searches were conducted to help refine the strategy, trading the overall recall rate (number of search hits) with the precision of the search (number of relevant hits within any one search).

The search strategy used has had to be tailored to the restrictions of the different databases used. Where feasible (as with Medline) we have relied on structured key wording for both injuries and economic evaluations/cost of illness studies. We have made use of strategy previously developed to identify health economic evaluations, that has a good level of precision but minimising recall and thus helps keep search manageable (Sassi et al., 2002). Thus in Medline we have used the exploded MeSH terms '(Wounds and injuries'+ OR 'Accidents' OR 'Self-Injurious Behaviours' OR 'Violence' OR 'Occupational Safety'+) AND the MESH term Costs and Cost Analysis (MESH)

In databases where such controlled vocabulary is not present we have combined a range of cause of injury terms (e.g. road traffic accident, suicide, fall etc) and/or intervention terms (e.g. hip protectors, seat belts etc) with economic analysis terms (cost effective, unit cost etc). It should also be noted that alternative US spellings, plurals as well as using some truncated terms to pick up alternative endings to words are included in the final version of the strategy. Electronic search strategies have been saved where possible using the appropriate software platform so as to allow easy adaptation, updating and repeated testing of search strategies. This allows any key terms omitted to be added at a later stage if appropriate and then scrutinize only the additional references retrieved.

Handsearch

The gold standard of any literature review remains the handsearch and more than 30 key journals are being handsearched. (Many journals have already published on-line issues until early 2007). The handsearch is the ultimate recognition that many papers may be missed by electronic searches alone because of the vagaries of bibliographic coding systems; moreover some papers do not mention their economic component in their abstracts.

A 'snowballing' process has also been adopted so that references of relevant papers (where available) are being checked so as to potentially throw up other relevant papers. We have had to be pragmatic on this however because of time constraints and have primarily focused on the reference lists of those papers which in fact were reviews of economic evaluations in the area of public health.

Snowballing

A 'snowballing' process has been adopted so that references of relevant papers (where available) were checked so as to potentially throw up other relevant papers. We have had to be pragmatic on this however because of time constraints and have primarily focused on the reference lists of those papers which in fact were reviews of economic evaluations in the area of public health.

Previous systematic reviews

Our objective was not to reinvent the wheel; we included in our database any of the 414 economic evaluations on health promotion identified through a narrower review undertaken at the University of Calgary (Rush et al., 2004) Our broader but shallower strategy inevitably missed some of these papers, but to have replicated this their search strategy across public health was not feasible within the constraints of this analysis. We also included a small number of studies identified in another review of economic evaluations in the field of health promotion undertaken in Switzerland by the Wintherthurer Institute.(Winterthurer Institut fur Gesundheitssokonomie, 2004)

Websites

Increasingly web sites provide a useful source of additional information. However pragmatic time constraints mean that we must carefully restrict the number of websites examined. Economic evaluations identified through the various publications of the US Task Force on Community Preventive Interventions (www.communityguide.org) were included, as were public health related interventions identified through the review of contributions to the wider public health complied by the Cochrane and Campbell Collaborations. We also searched the Institute of Education's EPPI Centre's Database of Promoting Health Effectiveness Reviews (DoPHER) which does include some economic evaluations. http://eppi.ioe.ac.uk/EPPIWeb/home.aspx?page=/hp/&Control=Search

Limited searches were conducted of both the Cochrane and Campbell Review databases along with those of the NHS Economic Evaluation Database and the and the CODECs (Connaissances et Décision en Economie de la Santé or Knowledge and

Decision in Health Economics) database. The WHO's CHOICE (Choosing Interventions the are Cost Effective Programme) has also been examined. We also looked at the sites of selected NGOs, Govt Departments and International Agencies and some Academic Research Centres. To complement all of the above a strictly limited Google search with narrowly defined Boolean operators was conducted.

Bespoke expert questionnaire

A small group of contacts in EU countries were also invited to complete a brief questionnaire to provide an update on the local situation and differing priorities and needs across countries, as well as provide some local evidence on the socio-economic impact. Some information on national and regional strategies adopted both to improve the quality of information available and to prevent/reduce the impact of injuries whether they be related to mental health problems, occupational risks in the workplace, on the roads, and in many other settings are also highlighted.

Reviewing method

Reviewing involves a two stage process; abstracts of papers identified from the electronic search are checked for relevance. Two reviewers looked at papers independently. Where disagreement – papers were discussed on a face to face basis, and a final decision on inclusion/exclusion made. Papers without abstracts (with the exception of databases where abstracts are not provided and a prudent judgement based on title alone made) are excluded from our analysis. If abstracts meet our inclusion criteria they are coded and full papers obtained for subsequent detailed analysis. Only full papers (reviews, methods papers and original studies) were included – letters and editorials were excluded. An algorithm setting out the steps for determining suitability of each paper is set out in Figure 2 in Appendix II.

Coding and storage of studies found

We have used the same approach as used previously in a review of public health interventions to code relevant papers. This is consistent with the approach recommended and developed by the Evidence for Policy and Practice Information Co-ordinating Centre (EPPI-Centre) at the Institute of Education, London. This approach allows detailed analysis of what might be very disparate sources of information, and has also been used to help in the review of information which crosses disciplinary boundaries. (Gough & Elbourne, 2002)

For instance we can classify studies by type of intervention type, e.g. regulatory or legal instrument, safety enhancing devices etc, economic evaluation methodology used, cause of injury, target population, country of application, country of authors etc. We have also provided a very brief summary of key message. On our internal version of the database we have also included abstracts of studies. It should be noted that this information cannot enter the public domain without the express permission of the copyright holders.

All papers meeting our inclusion criteria have been entered into a Microsoft® Access database. A software code has been written to (relatively easily) export bibliographic records identified from Endnote into this Microsoft Access database. A number of structured queries have now been developed e.g. to identify number of studies by

country and cause of injury instance. Further queries are being added. It should be technically possible to subsequently place this database on the web based interface that is also being developed as part of the APOLLO project. This will allow for further analysis and dissemination and may also be a legacy of the project (subject to the caveat re copyright mentioned above).

2.4.3 Results

More than 5,000 papers meeting our inclusion criteria have been identified, including more than 3,400 in Medline alone. Final inclusion figures are still being processed with some work on databases to be completed, so precise figures on the number of COI and economic evaluations cannot as yet be tallied, as some data still needs to be entered into Access database. (See Next Steps). Nonetheless a wealth of information has been found and it is also clear that in some areas of injury prevention, little economic evaluation has been undertaken. Some preliminary findings in several areas briefly illustrated below.

Overall socio-economic cost of injuries

Despite their significance, there have been comparatively few attempts to comprehensively estimate the total economic consequences of injuries in a European context, in contrast to the USA where a number of studies have been produced. There are however European studies that have documented the costs of some specific injuries, e.g. falls to older people, completed suicides or looked at the costs associated with specific risk situations or settings such as road traffic accidents or farm injuries. This may in part is due to methodological and practical challenges both in obtaining data and assessing its economic cost across different sectors, but it may also reflect capacity constraints or a lower level of interest in determining economic value compared with the situation in the US. Few cross country studies looking at the economic costs of injuries have been conducted and often where this has happened different methodologies have been used making comparisons very difficult.

One exception has been the development of the Eurocost study supported by the European Commission, (Mulder et al., 2002; Polinder et al., 2004) which estimated the direct medical care costs associated with hospital presenting injuries across 10 EU countries. Findings from this project were used to extrapolate hospital costs of €10.8 billion across all EU-15 countries for all admitted injury patients. They concluded that the economic costs of injury were a significant indicator to be used in assessing population health, as they are a major source of hospitals costs in Europe, thus meriting greater attention in public health policy across all European countries. Injuries among older people in particular generate high hospital costs.

The initial work of the EUROCOST project was an important step forward in helping to aid decision makers across different sectors consider whether and how to invest in injury prevention initiatives. Direct medical care costs are however just one component of total economic costs of injuries- other costs are incurred in social care, through rehabilitation services, in the criminal justice system, through the loss of human life and the loss of economic productivity to name but a few.

While there are many caveats with the way in which such costs should be measured one recent study from London is illustrative of the need to do more work in this area. The figures in this study, which the authors claim to be conservative, for the city of

London alone are nearly double the health care services combined across the 10 countries in the EUROCOST study. Undertaken in London in 2002 the study estimated that the total cost for all injuries, intentional and unintentional was £19.7 billion per annum (Mallender et al., 2002). Direct costs are estimated at £290m for medical and social care, with the majority of costs accounted for by the human costs in terms of the loss of life or incurrence of serious injury, valued using a standard contingent valuation approach by the UK Department of Transport. This estimated that the value to society of each life lost was more than £700,000, while for serious injuries it was over £100,000 and more than £7000 for slight injuries. A similar approach was used to estimate the value of lost outputs or productivity with £17m criminal justice also attributed to the criminal justice system.

While care should be taken in the interpretation of this data which is very London specific (and also which the authors claim to be a conservative estimate of total costs) it nevertheless is an indication that substantial economic costs are incurred outside the health and social care systems, and that the health and social care costs of fires, falls, poisoning and other accidents may together be far greater than the costs of road traffic accidents in many settings.

Road Traffic Accidents

A substantial amount of work has been produced on the costs of road traffic accidents in the US, Australasia and parts of Europe and elsewhere. The WHO estimate that worldwide annual cost of RTAs is $518 billion with the vast majority of these costs incurred in high income countries (Peden, 2005). For non fatal accidents there is some evidence to suggest that improvements in medical care, augmented by safety measures, have reduced the costs of severe injuries over time, as illustrated in one Swedish study (Maraste et al., 2003).

Methodologically transport related evaluations have made much greater attempts to assess not only the direct and indirect costs of injuries, but also the intangible costs associated with pain, grief and suffering. Contingent valuation approaches where surveys have been conducted to elicit individuals willingness to pay to avoid RTAs have been conducted in many countries and may in some instances be updated on a regular basis as in the UK e.g. (Department of Transport, 2004). The approach is not new and has been used to assess the merits of investing in car protection measures for several decades (Robertson, 1977). In New Zealand for instance the Land Transport Safety Authority is mandated to ensure that 'the social benefits of road safety programmes exceed the costs of implementing them. (Guria, 1999)'

Older People and Falls

A major preventable health issue for older people are falls. In England, for example, they contribute significantly to acute hospital admissions, and their costs are equivalent to almost 20% of the annual NHS drugs budget. Around 650,000 people over 60 are taken to A&E after falling, and over 204,000 are admitted to hospital. Inpatient admissions have been estimated to account for 49.4% of total cost of falls, while long term care costs were the second highest, accounting for 41%, primarily in those aged 75 years and above. Overall falls were estimated to cost £300,000 per 10,000 of the population aged 60 to 64, rising to £1.5m per 10,000 aged 75 and over (Scuffham et al., 2003).

Suicide and self inflicted injuries

This review indicated that, despite these profound human and socio-economic costs, surprisingly few international studies appear to have estimated the total population wide costs of suicide, although a number of studies have sought to put a value on suicides associated with any one specific mental disorder, as for instance with depression in one recent study in England (Thomas & Morris, 2003). Of those studies of most relevance to a European context, in the Canadian province of New Brunswick average direct and indirect costs of each suicide in 1996 were estimated to be £443, 076 (CAN$1,019, 210) (Clayton & Barceló, 2000). In New Zealand in 2002 the estimate including intangible costs was £1,158,768 (NZ$ 3,094, 243) per suicide. (O'Dea & Tucker, 2005). In Ireland, using a similar approach, costs in 2002 were estimated to £1,402, 438 (€1,982,667) per suicide (Kennelly et al., 2005). Recently McDaid and colleagues estimated that in Scotland the lifetime costs of suicides in 2004 are estimated to be almost £1.08 billion of which 75% of costs would be due to suicides by men (Platt et al., 2006). By far the largest single component of the total costs of suicide (more than 70%) are the intangible human costs experienced by families; indirect lost productivity costs account for 21% of the total costs. There are few cost estimates for deliberately inflicted self-harm events. One estimate from Ireland also suggests that their costs can be substantial at almost £22 million (€31 million).(Kennelly et al., 2005) These include both the direct health and other costs from dealing with deliberate self harm events plus the loss of both waged and non waged contributions to the economy

Domestic abuse

There have been few attempts to quantify the socio-economic impact of domestic abuse. One study in the US compared the costs of intimate partner violence by gender. Unsurprisingly there were significantly more reported cases of abuse to women – the economic impact in terms of use of health and other services, as well as lost employment or time on home responsibilities was found to be twice that of men who suffered abuse (Arias & Corso, 2005).

What do we know about cost effectiveness of strategies to prevent or reduce the consequences of injuries?

The evidence base on the cost–effectiveness of interventions for injury prevention is growing although our review indicates that the focus of many studies has been in north America, western Europe or Australasia alone and their results may not be relevant for other settings. Approximately 50% of all studies found thus far are from the USA. Unlike much of health economic evaluation, there is also a much greater use of cost benefit analysis techniques.

Broad strategies

There are few European examples of evaluation at a national or area level of injury prevention programmes. One example is an evaluation of a community public health injury prevention programme in Sweden (Lindqvist & Lindholm, 2001). The intervention consisted of a number of different health promoting actions targeted at children, older people, road traffic, the workplace and the sports ground. The costs of

investing in the programme were measured as well as the impact on the economy of reducing injuries such as a reducing in lost working time and benefits for the health care system. Overall the economic benefits of reducing injuries were twice those of investing the programme 20m SEK in costs avoided compared with 10m costs for running the programme. Such evidence can be a powerful argument for investment in injury prevention.

Road traffic accidents

There are a significant number of economic analyses related to road traffic accidents. These range from analysis of overall strategies to a range of specific measures including in car devices such as air bags and the use of seat belts, traffic calming measures, regulation and legislation of laws against alcohol and substance, the wearing of helmet by push and motorised bicycle riders, and even the adverse economic impacts of pharmaceutical therapies which have the unintended side effect of drowsiness that can increase the risk of accidents (Sullivan et al., 2004). Again comparatively few studies are set in a European context.

One previous review of economic evaluations undertaken by Miller and colleagues in the US found that 19 of 33 road safety measures had net societal benefits (Miller & Levy, 2000). An economic evaluation of an overall road safety strategies was also undertaken in New Zealand. This analysis concluded that 'safety programmes (particularly those programme aimed at reducing high risk behaviour on the road) are producing considerably high returns. (Guria, 1999) Another area where analysis has been conducted is the effectiveness of advertising, and different advertising approaches on road traffic behaviour, especially to tackle drink-driving. An Australian study indicated that low cost adverting was an effective approach to reducing drink driving related accidents (Tay, 2005). Miller et al looked at three different approaches to compulsory breath testing in New Zealand, in which a 'standard' intensive campaign was compared with one which also had an enhanced media campaign and another which also made use of 'booze buses' (Miller et al., 2004). All three programmes were cost saving, with the latter having the greatest returns.

No economic analyses of the merits of using air bags have thus far been identified in a European context. While there is a considerable amount of data on effectiveness only a comparatively small number of economic analyses have been undertaken. One analysis was undertaken to determine whether previous claims and predictions of cost effectiveness were borne out in the United States (Thompson et al., 2002). This indicated that air bags appeared to represent a reasonable investment, but that the original estimates of effectiveness in the model (admittedly constructed in 1984) were excessive. Metzger and colleagues in the US using routine data collected over a five year period were able to demonstrate that the wearing of seat belts reduced the adverse consequences of accidents, significantly reducing time off work and health care costs (Metzger et al., 2004).

Restricted access to interventions of proven effectiveness can reduce the actual cost effectiveness of an intervention in practice. One interesting evaluation looked at a scheme for a hospital in Greece to allow new parents to borrow special child seats at low cost. The scheme which involved a two year follow up appeared to show a high degree of concordance in the use of seats and moreover four-fifths of families had gone on to purchase new child seats as their infants grew (Kedikoglou et al., 2005).

There are also economic analyses of the use of helmets both by push and motorised cycles. One New Zealand study looked at the cost effectiveness of a law introducing a mandatory requirement for pedal cycle riders to wear helmets. It reported that the law had been cost effective for children with a cost of $NZ 9990 per injury prevented for children between 5 and 12 and $NZ 32241 for those between 13 and 18 but for adults this ratio in excess of $NZ 45396 for adults because of the cost of law enforcement. Using CBA the law only had a net benefit for the youngest age group (Taylor & Scuffham, 2002).

Falls in older people

Exercise programs

Falls and other accidents are a major cause of death and disability for older people. Exercise can be very beneficial for older people to reduce both the likelihood and consequences of falls; multi-faceted strategies involving changing attitudes, knowledge, behaviour, reduction of hazards both in the home and local environment, appropriate footwear, community walking programmes, and consultation with health professionals are suggested to be effective in one recent review (McClure et al 2005). One US study focusing on older women demonstrated 1% gains in hip and spine bone density, 75% increases in strength and 13% increases in dynamic balance with just two days per week of progressive strength training (Centers for Disease Control, 2003). Strength training programs can also have a profound effect on reducing risk of falls, which translates to fewer fractures (Province & al., 1995). Another review reported that some tailored home exercise programmes have been found to reduce falls in women aged 80 and over living in the community (Cryer, 2001). Physical activity and exercise have been shown also to improve mental health by reducing clinical depression and anxiety, enhancing stress responsivity, and improving self esteem (Scully et al., 1998).

While the evidence on the effectiveness of exercise seem relatively strong, the situation in terms of cost effectiveness is more complex. Most studies indicate that exercise programmes will not be cost saving but will reduce the additional use of future health care services. They have been shown to be most cost effective for older adults. However caution should be exercised in interpreting study results, firstly given that the very long term benefits to younger people are more difficult to estimate, and secondly as few economic studies have considered the substantial positive impact of exercise on mental health.

In the UK, one 1997 study estimated that for the over-65s for every 10,000 participants in a weekly exercise class 76 deaths and more than 230 in-patient episodes could be avoided. Cost per life year saved was also extremely favourable compared with other funded interventions and it was recommended that health commissioners should begin to think of purchasing exercise programmes alongside other health-promoting measures (Munro & al., 1997). An earlier UK modelling study indicated that there are strong economic arguments in favour of exercise in adults aged greater than or equal to 45 but not in younger adults (Nicholl et al., 1994). A more recent analysis of supplementary class based exercise programmes for people with osteoarthritis also found that these had a 70% chance of being cost effective if decision makers were willing to pay £10,000 per quality adjusted life year saved (McCarthy et al., 2004).

Elsewhere in New Zealand a randomised controlled trial of a home based exercise programme to prevent falls reported that although falls accounted for 27% of all health care costs of the over 80s in the study, the reduction in the number of falls did not significantly reduce health care costs.(Robertson et al., 2001) Another study reported that the use of educational materials alone within primary care practice to reduce the number of accidents in older people is insufficient and that more active strategies are required. This study reported that in 19 general practices in the UK, 1,666 patients experience one or more accidents, costing the NHS more than $1.4 million in treatment costs or $8,400 per patient and that nationally in the UK this is equivalent to approximately $586 million (more than half of the total costs of implementing the entire HLC programme) (Kenkre et al., 2002).

Cost effectiveness here seems very dependent on the level of community engagement. Studies on the promotion of physical activity in ethnic minorities, specifically in the South Asian community living in England, have shown some barriers to behaviour change. These include a low level of understanding or lack of perception that physical activity could actually maintain health. Further barriers to participation included child-care responsibilities, modesty (dislike of mixed sex settings), partner's disapproval, cost, and concerns about girls' physical and moral safety (Johnson, 2000). Barrier to participation by older people include a lack of information about physical activity and aging, stereotypical images of ageing and low social support. Adequate environmental support for physical activity (e.g. transportation, access, urban planning) and the modification of activity programmes to meet special needs and requirements can encourage participation (World Health Organisation, 2002).

Hip Protectors

Another example of an intervention for which some cost effectiveness studies have been undertaken is in the area of hip protectors. A meta-analysis of RCTs was used to build a Markov decision model in Canada looking at the use of hip protectors by older people living in resident. Compared to no intervention hip protectors were found to be dominant, that is both more effective and with lower costs (Waldegger et al., 2003). In Europe one study undertaken in the UK compared the use of hip protectors plus vitamin supplements with vitamin supplements alone in the over seventies. Making use of hip protectors appeared to represent a cost effective intervention, being dominant for high risk females, and having an incremental cost per QALY gained of £11,722 and £17,017 in general female and male high risk groups respectively. Only in the general male population was the cost per QALY gained higher than that typically considered to be cost effective in England. £47,000 compared with a typical £20-30K range) (Fleurence, 2004)

A study of residents in nursing home care in Hamburg also reported a very favourable cost effectiveness ratio of $1,234 per additional fracture avoided (Meyer et al., 2005). Positive findings were also reported in recent Canadian and US studies of nursing home residents (Colon-Emeric et al., 2003; Honkanen et al., 2005; Singh et al., 2004). Not all evidence is however positive, another study from the Netherlands suggested that for a very frail population there was neither any evidence that hip protectors were effective in preventing fractures and moreover there appeared to be no difference in resource costs between those who used and did not use hip protectors (van Schoor et

al., 2004). One earlier US study which relied used modelling techniques to look at the impact on hypothetical cohorts of subjects, again hip protectors were found to be highly cost effective for women, but discomfort meant that there was a deterioration in the quality of life of men (Segui-Gomez et al., 2002). Interestingly there has been at least one study which has used conjoint analysis methods (where individuals have to rank a series of different scenarios which look at a number of different issues – in this case including protective effects, wearing comfort, ease of handling, and out of pocket costs.) to estimate the willingness to pay of older people in Switzerland for hip protectors to avoid hip fractures (Telser & Zweifel, 2002). In only 3 of 23 scenarios presented did the willingness to pay for a hip protector exceed its cost.

Suicide and non fatal self inflicted injuries

Given the limited knowledge on the effectiveness at programme level of area based suicide strategies, (a necessary prerequisite to economic evaluation) it might be considered unsurprising that no economic evaluations of national suicide prevention strategies were found in our review. Similar observations have been seen elsewhere, for instance the US Preventive Services Task Force in its review of the evidence on the effectiveness of screening for suicide risk, failed to identify any studies that included an economic evaluation (nor for that matter any evidence that screening for suicide reduces suicide attempts or mortality) (US Preventive Services Task Force, 2004).

This is not to say that no economic evaluations of area based suicide prevention strategies have been conducted, but they are rare and modest in scope. Perhaps the most complete, albeit still with many limitations, is a retrospective analysis of an area based multi- intervention suicide prevention programmes for the Western Athabaskan Native American Tribe living in a reservation town in New Mexico (Zaloshnja *et al.*, 2003). This mental health status of this indigenous population in the US is poor; the rate of suicide is high, around 1.5. times higher than the general population. The prevention strategy primarily focused on young people between the ages of 15-19 but had the whole community as a secondary target group. The initiative included the training of between 10 and 25 youths per annum to respond to young people in crisis and to refer individuals to the appropriate mental health services. This was one element of a many different elements within the programme including: postvention outreach, community education on suicide prevention, and suicide-risk screening in health and social care programmes. Direct costs of $120,000 were avoided and it was estimated that the value of suicides averted was some $1.7 million. The cost per QALY saved was just $419, while the value of benefits gained were 43 times greater than costs incurred. While this study might suggest that such a programme can be highly cost effective there are many limitations. Most notably no comparator group was included in the evaluation; cyclical increases and decreases in the suicide rates in the tribe had in fact been observed every six years between 1957 and 1987. Moreover the analysis by its nature makes it difficult to determine which individual elements of the strategy were effective.

Another US based study is a hypothetical cost benefit analysis of two suicide prevention programmes targeted at university students in Florida (de Castro *et al.*, 2004). One was a five lesson general suicide education programme and the other a peer support group programme. Data on the effectiveness of the two interventions were obtained from a review of the literature and costs estimated of delivering the two

interventions to all university students in the state. In fact this study was a cost-offset analysis as the potential costs of delivering the intervention were compared with the lifetime costs that would be avoided if suicides were prevented – nevertheless both interventions the study concluded would be cost saving as these cost offsets would be far greater than the costs of implementation. The peer support programme had a lower cost and potentially greater level of costs avoided, however the costs of implementation are underestimated as the authors themselves admitted that they had not put a value on the significant time input of volunteers in delivering peer support programmes.

In England an economic evaluation of home based social work intervention targeted at children who had previously deliberately poisoned themselves.(Byford *et al.*, 1999) This concluded that family-based social work is as cost-effective as routine care alone. Suicidal ideation was lower in a sub group of children without depression at a six month follow up, with no difference in costs. Another study looked at the use of cognitive behavioural therapy with people with a history of deliberate self harm in centres in both England and Scotland(Byford *et al.*, 2003). This study suggested that manual cognitive behaviour therapy was likely to be cost effective in reducing the number of deliberate self harm events, but it did not look at suicide as a potential outcome.

The potential costs and consequences of suicide prevention centres in the US were assessed in the 1980s (Medoff, 1986). These relied on the provision of a 24 hour telephone service whose primary action was to initiate crisis intervention services. A regression model was used to estimate the impact of suicide prevention centres on suicide rates. The economic analysis suggested that the value of human lives saved was at least five times greater than the costs of providing suicide prevention centres. Again however little evidence on the effectiveness of these centres was provided.

While no studies of the cost effectiveness of screening strategies for suicide in the population were identified we did identify one study that had evaluated the costs of delivering a school based mental health screening and treatment programme in New York, one of whose stated objectives was the prevention of suicide (Chatterji *et al.*, 2004). Elsewhere there has been some economic appraisal of various safety measures (such as safety nets and barriers for bridges) and restriction of access to means such as firearms and poisons, the latter usually in the context of injury or violence prevention rather the suicide per se.

Domestic abuse/violence

Domestic violence and abuse is another area where little economic evidence exists. This may be due to the difficulty of conducting evaluative research generally in this area. There have been some studies that look at the use of different packages of services following violence and their impact on health status (Domino *et al.*, 2005), but little looking at the case for the prevention on abuse. A second area of abuse that emerged with some literature was that of the abuse of vulnerable children and adults by their family carers. One paper that the DM was asked by chance to review recently (still confidential at moment so reference cannot be disclosed) looks at the economic case (in terms of the prevention) of child abuse by early intervention and placement of children in foster care in the UK.

Reflections

Our initial analysis indicates that the evidence base on both the costs of injuries and the cost effectiveness of interventions to prevent injuries is in many instances substantial, although it is clear that much of this information is from the United States. There is good evidence that a range of interventions exist that are not only cost effective but in fact cost saving because of the future health (and other costs) avoided. There remain gaps in knowledge – particularly for more complex interventions which require behavioural change.

Information from outside Europe can be of great help to European policy makers although a high degree of caution needs to be exercised when basing policy on evidence taken from a different context. System structures will vary, cultural attitudes may impact on the uptake of some interventions (e.g. the wearing of seatbelts) and there may be substantial differences in local unit costs. In some instances, policy makers may need to invest in establishment costs for programmes and strategies, for which previously, no training was provided. In other instances a strategy may involve the expansion of an existing programme.

In particular, a continuing challenge is to further improve our understanding of cost–effectiveness in the contexts of central and Eastern Europe. Work in the second year of the project will the economic costs of implementing effective strategies in different settings and contexts across Europe. This may include some threshold analytical modelling to identify key factors in different settings that may impact on the potential cost effectiveness of strategies.

2.4.4 Promotion/dissemination

The results of the final review will be submitted for presentation at various public health conferences as appropriate and journal articles will be prepared. The only specific work due to be presented in the near future relates to the cost effectiveness of suicide prevention. This will be presented at the UK Public Health Association conference in Edinburgh and at the Mental Health Policy and Economics conference Venice, both in March 2007. It will be important to also produce policy user friendly short briefs on the outcomes of this work. The database of cost of illness studies and economic evaluations will also be placed in the public domain (subject to copyright issues)

2.4.5 Next steps

While we have made much progress in reviewing the literature, unforeseen staffing changes have meant that not all task have been fully completed as yet; there is still some additional work to be done on some databases to complete this task; moreover the handsearch is still to be completed. A very small number of papers are not easily available are being obtained via the British Library. We anticipate having the final version of the results of the review and papers for analysis completed by the end of February. This will also allow time for additional specific searches to be conducted or further refinements to search strategy should there be specific areas of institutional care where little information will be obtained.

Looking at potential cost effectiveness

Drawing on information from these systematic reviews as well as work undertaken elsewhere in WP2 looking at the health care system related costs of injuries. The potential cost effectiveness of implementing effective strategies in different settings and contexts across Europe. This may include some threshold analytical modelling to identify key factors in different countries and settings that may impact on the potential cost effectiveness of strategies. Other factors to consider here include the extent (in the absence of data from Europe) evidence on cost effectiveness from outside Europe is relevant to European context. Another challenge may be to identify some of resources (human and capital) and structures (sunk or start up costs) required to implement potential strategies and interventions in different countries

Links with other work packages

Providing information on the economic consequences of injuries and potentially cost effective ways to prevent or alleviate injuries may promote the appeal of the prevention message; this work will also be □eedback to and systematized by WP3. There should also be useful synergies with work undertaken on the specific areas on falls (WP4) and accidents for vulnerable road users (WP5)

For a list of references linked to this sub-project, please view Appendix II.

Work Package 2.5: Subproject: Injury prevention policy implementation
Drafted by Dr. Skalkidis

Note: This subproject amounts to 9% of the WP2 total budget and is co-responsible (together with the previous subproject) for one of 7 WP2 deliverables: D2.4 Report on efficient strategies to reduce burden of injuries in Europe

As scheduled this project has not yet started and will do so in 2007.

Work Package 3: Ways to overcome the barriers in applying best practices and efficient policies to achieve tangible prevention of unintentional injuries in all age groups and development of the European Code against Injuries

Drafted by Antonia Tsirigoti and Hans Van der Veen

3.1 Introduction

This work package is concerned with improving our understanding of the obstacles as well as the facilitating factors that come into play when addressing the prevention of various kinds of injuries amongst diverse age groups. Our assessment focuses both on environmental/ external factors (e.g. legislative, educational, financial, administrative, public will) that play a role in the implementation programmes/ projects, and the more behavioural aspects that influence peoples risk behaviour and their responsiveness to messages and information that aim to prevent injuries.

The main objectives of the first year were:

a) To fine-tune the work plan and the methodology through which results are to be obtained, assessed and evaluated (preparatory phase);
b) To execute those tasks defined in the work plan.

The preparatory phase culminated in a two day meeting with all the partners in this WP, in which discussion and decision-making took place on many of the relevant and foreseeable issues to tackle. All activities undertaken in this phase resulted in a detailed work plan, time schedule and task descriptions as well as an elaborate description of the methodology that will guide our work in this work package.

Working package 3 has been divided in four modules. In the first year tasks were undertaken for the first three modules, according to a detailed work plan. In accord with this scheme, the tasks for module one have been finalised, and the planned steps have been undertaken for further development of module two and three. With this the foundation has been laid for the envisioned progress in the next two years of the project.

Aims

In module one the main objectives are defined as:

a) To identify the injury prevention priorities
b) To gather the best practices and policies for the identified injury priorities
c) To select the best of the injury prevention practices and policies

Module two aims to identify barriers and success factors that hampered or helped the implementation of effective practices as well as the ways by which implementers tried to overcome such barriers and garnered resources to bring success factors into play.

Module three seeks to identify risk factors and risk behaviour pertinent to young people (18-24 years of age).

Tasks

The tasks in module one constituted of systematic literature reviews to identify, select and assess existing good practices and policies for injury prevention. Also, a set of criteria was developed in order to select the best practices and policies for injury prevention. Application of the selection method was necessary to determine what represents a successful outcome and to identify those interventions that would be approached for further investigative activities of module two. In order to organize and harmonize the various literature reviews an extraction form was developed. The methodology for priority setting in the types of injuries and age groups to be investigated in this work package as well as that for evaluative purposes is described in other sections of this report.

The main tasks undertaken in module two for the first year were twofold. First, the drafting and distribution of a questionnaire, directed at the implementers of those interventions selected through the module one methodology. Second, the drafting the European Code against Injuries. As of writing this report the questionnaire is being sent out. For the conception and drafting of the European Code against Injuries we finalised some of the methodological stages, further described below.

The main tasks of module three are to perform a literature search and classification of the best practices for the prevention of injuries in young people (18-24 years) and to design and implement original data collection on attitudes of young people. For accomplishing the tasks in this module, in the first year, we drafted a questionnaire and set it out amongst students in Greece and Italy. An assessment and analysis of

outcomes has still to be made. More precise information will be provided further down in this section.

3.2 Description of work

Preparatory phase
During the preparatory phase [December 2005- March 2006] the following managerial documents have been created in collaboration with work package 1:

1. WP3-Work-plan
2. WP3-Timetable
3. WP3-Flowchart
4. WP3-Logic diagram
5. Preparation of 1st WP3 Managerial Meeting (including all necessary information material and discussion documents)
6. 1st WP3 Managerial Meeting (March 2-3 and March 20-21 2006 in Athens, Greece)

Module One: Practices and Policies in unintentional injury prevention
Within the scope and resources of this work package it is not possible to gather, evaluate and identify barriers and success factors for all existing practices and policies related to all age groups and all types of unintentional injuries. Therefore, an effort was made to identify priorities for injury prevention to be researched in this work package. Based on mortality data, and assessment of the injury burden per age group, and Delphi Survey results, three main priority areas for injury prevention were selected: Road traffic injuries, alcohol related injuries, and occupational injuries. We decided to also conduct a systematic literature review for drownings, so as to be in compliance with the methodology that was developed for the rest of the priorities. WP3 partners commented on this list of injury priorities and revised them after thorough discussion during the first meeting. Once the priority areas for research were established, work started on the literature reviews. To facilitate this research two lists of similar projects and organizations were created including: 55 organizations and 6 EU projects. In order to facilitate the gathering process for literature on relevant policies and practices for injury prevention, a methodology for literature review and web search was developed. This included:

- Development of a literature Search Protocol (keywords, procedures, inclusion/exclusion, evaluation and rating criteria for policies and practices selection);
- Compilation of a list of relevant e-databases;
- Development of an Extraction Form (MS Access database)

The first draft search protocol was sent to partners for review. The final version can be viewed in Appendix III.

On the basis of existing literature reviews and systematic reviews of the literature on policies and practices for injury prevention in the selected injury areas, the work package leader completed a list of types of practices with proven effectiveness of prevention in each prioritized type of injury. This list was sent to partners aiming to serve as a common-guide for reviewers during the search procedure.

Three stages of assessment guided module one in identifying good/ effective practices and policies. Each step of assessment was based on a set of different criteria that were discussed in detail during the first managerial meeting and revised accordingly.

The criteria for assessment of practices and policies were divided into: a) *inclusion/ exclusion criteria* for literature review; b) *evaluation criteria* for screening among included practices/policies, and c) *ranking criteria*, intended to rank the evaluated practices and policies so as to be able to select the best/ most effective practices and policies.

Extraction forms (MicroSoft Access databases) for recording and evaluating practices and policies were created, including the criteria for all the three types of assessment criteria mentioned above. In order for the extraction forms to be pilot tested, partners completed the forms for the same documents (one policy document relevant to RTI (road traffic injuries) provided by Yousif Rahim and one practice document relevant to RTI provided by Denise Kendrick). The WP3 team (University of Athens) compared the responses for identification of discrepancies and made adjustments to improve the form.

The next step was to gather and assess preventive practices and policies, drawing both on published peer reviewed articles and relevant grey literature for each priority area. The WP3 team (University of Athens) conducted systematic literature reviews for literature published in the English language, whereas each partner searched for practices and policies in his/her country/ language. Malcolm Barrow and Denise Kendrick sent to WP Leader the gathered practices and policies from the UK, Giuseppe Masanotti and Eva Negri sent the respective material from Italy. Contributions from our other partners are still pending. The project leader also undertook a literature review on drownings.

Gathered good practices and policies were ranked in order to select the best of them that will be further assessed. A list of the 'best' of the good practices for each injury prevention priority (road traffic, alcohol related and occupational injuries, drownings) and for each age group was developed. To avoid duplication of work, best practices for the age group >65 were certified from the scientific results of the EC co-funded European Network for Safety among Elderly (EUNESE) project (Grant agreement 3003316).

In Appendix III a short overview of each participating partner's contribution is presented.

Module Two: Identifying barriers and success factors for selected practices and the ECaI – European Code against Injuries

a. Questionnaire

A questionnaire (Appendix III) was developed by the WP3 team (University of Athens), which included a brief set of mostly closed ended questions for identification of success factors and barriers for the implementation of each of the selected good practices. The first draft version of the questionnaire was sent to all the partners for review. It was also pilot tested in Greece among various implementers. The questionnaire has been sent out to the implementers of the "best" interventions Addressees of the questionnaire were also asked to identify the actions they undertook

to overcome barriers and enhance success factors. This questionnaire has been distributed to those professionals that implemented the best practices selected in the work of Module One. The questionnaire has been sent out to 107 implementers (14 for alcohol related injuries, 20 for road traffic injuries, 5 related to a combination of road traffic and alcohol related injuries, 23 for occupational injuries and 8 for drownings). To assure better response and outcomes, the WP3 team (University of Athens) designed a web-board (http://www.euroipn.org/apollo) and uploaded the contact details of the recipients of the questionnaire and a short description of the intervention. The web-board also provides a forum for discussion and aims to stimulate communication between the various experts as well to provide a further understanding of the factors that influenced the successful intervention. To access the web-board, each recipient has been given a password and username. The WP3 team (University of Athens) acts as the moderator of the web-board. The results of the questionnaire will be posted on this web-board in an aggregated format to initiate further discussion and information sharing. The first results are expected early 2007.

b. European Code against Injuries (ECaI)

An important deliverable will be the European Code against Injuries. The method for deriving at key messages for injury prevention as well as drafting the scientific background information and references has been developed over various stages and tools have been designed to assure its qality.

Based on the results of the systematic literature reviews of Module One, the WP3 team (University of Athens) initiated the preparatory phase for developing European Code against Injuries (ECaI). The WP3 team (University of Athens) together with Malcolm Barrow and Denise Kendrick developed a draft version of the abbreviated ECaI. Experts in injury prevention aided to finalize a comprehensive draft version of the code, together with a matrix that will be send to both WP3 partners and a group of injury experts for further fine-tuning.[1] While the abbreviated version of the ECaI will constitute ten core preventive messages, this preliminary phase has included more than ten messages. The matrix includes all potential messages. The further assessment process aims to specifically identify which items and components of injury safety should be taken into account in drafting the abbreviated version of the ECaI. In later stages also the very wording of the messages will be scrutinized to assure the maximum effect. In the second year, the abbreviated ECaI is to be finalized and a larger document will be drafted providing the scientific evidence for the validity of the messages.

Module Three: Identifying ways to overcome age specific barriers and success factors

In order to identify risk factors and risk behaviour as well as ways to overcome barriers for injury prevention amongst adolescents, an electronic health card developed and used by the Preventive Medicine program at the University of Athens will be used. This electronic health card was introduced in the 2003 and used by 500 fourth year medical students of the University of Athens, in Greece.

[1] The experts in injury prevention will be asked to participate in various phases of the project, such as in the rating of the success factors and barriers for their country/ region, and in various tasks in Module four.

a. Work in Greece

The e-health card – a checklist of various health related issues to be completed by addressees and combined with educational program to improve health is has been implemented in Greece from 2006 onwards. It contains a section related to risk taking behaviour along with the personal characteristics, the outcomes of these sections will be analysed for the purposes of Module 3.

The program is introduced in the 1st year of studies for students of medicine as well as in other university departments.

The questionnaire has been translated from Greek in English Italian and Polish. Implementation has started in Greece and Italy.

So far, there has not been any official statistical analysis and assessment of the outcomes. Response rates are not known yet. Students' attendance to classes or issues concerning any other epidemiological outcomes will be featured in a forthcoming statistical analysis. Preliminary assessment indicates a high response rate and promising results for epidemiological analysis.

b. Work in Italy

In Italy, Eva Negri has started collecting data on attitudes towards risk taking behaviours among medical students. For comparative purposes, data were collected also from students from other faculties, in order to investigate whether the choice of becoming engaged in the health profession is also accompanied by a healthier personal lifestyle.

The study has proceeded as follows:

- A first draft of the questionnaire was prepared. This questionnaire was an adaptation of the one administered in Greece to medical students, and was translated in Italian language.
- A pilot study was performed to assure better results. For that purpose the questionnaire was administered to 15 students who were also asked to fill in a form concerning whether they had difficulties in interpreting the questions, answering them and they were asked for other comments on the various sections of the questionnaire. (For the purpose of the pilot study, the students were asked to fill in the part concerning the description of an accident, even if this did not occur within the last three months).
- A final version of the questionnaire was then prepared, taking into account the results from the pilot study as well as the need to maintain comparability with the Greek one. The questionnaire includes sections on personal characteristics, risk taking behaviours when on a vehicle (seat belts, helmets, cellular phone, alcohol), use of tobacco, alcohol and drugs, and a history of accidents in the last three months.

We are now administering the questionnaire to medical students, and students in health professions, and, for comparison, to students of the faculties of economics and statistics. At present about 250 questionnaires have been collected. Participation is on a voluntary basis, and the response rate is about 80%.

An input data form has been prepared using MicroSoft Acess software and the data input is ongoing.

c. Literature review
Additionally, a search of the literature concerning attitudes, barriers and facilitating factors toward the adoption of safe behaviours in young adults had been performed. Besides injuries, literature also concerning other risk factors (smoking, unsafe sex, etc.) has been considered, as some strategies may be transferable from one field to another. A classification scheme for this literature has been developed and the classification of the retrieved papers is ongoing.

3.3 Results

Module One
After defining the injury priorities to be targeted by APOLLO WP3, the next step was to explore the available evidence concerning good practices for reducing the burden of these injuries. We conducted systematic literature reviews of published findings on interventions (good practices) and policies aiming to decrease the burden of alcohol related injuries, road traffic injuries, occupational injuries and drowning. The systematic reviews targeted studies that evaluated the effectiveness of practices in preventing the above injury priorities. Studies contain specific implementations of interventions with defined outcomes and outputs, which are evaluated through process/outcome measures. We also searched for existing policy papers, which among their main goals and objectives aim to prevent injuries related to the identified priority areas. Electronic databases were searched (MEDLINE, ERIC, EMBASE, CINAH,L Cochrane Database, SafetyLit, Injury Prevention Database, Wiley InterScience, NIOSHTIC, NIOSH-NORA, and other Electronic sources related to the topic sites, from related organizations, networks, etc) and manual search on relevance references searched from the reference lists of the identified papers. A brief summary of the effective practices we found is presented below:

Occupational injuries
For falls-related injuries

- Workstation modifications- Fall Protection Systems including engineering modification and training (task-specific instruction and training on proper use of personal protective equipment (PPE))
- Enforcement of construction industry safety programmes implementation (including fall prevention practices and technologies) via a third party (e.g. University) participation
- Site visits and communication from the third party aiming to reinforce the intervention by helping the companies to make proper changes in their safety activities and the safety of their work environment
- Application of a post-offer, pre-placement assessment program
- Patient lifting intervention for preventing the work-related injuries of nurses

For work-related skin /eye /hearing injuries

- Consultative teams consisted of representatives from both, management and employees/ workers
- Educational programme for a group of frontline employees, who underwent formalised training, and subsequently introduced the information to their colleagues
- Recommendations for prevention of work-related skin /eye /noise problems in various workplaces

For musculoskeletal injury prevention

- Safety devices accompanied by written guidelines/ instructions and policies as well as the appropriate training
- Ergonomist for assessing the risk of manual handling in the workplace and making recommendations in reducing the rate and severity (time lost and cost) of workers' injury
- Awareness raising programs to promote safe practices and peer reminders to avoid unsafe practices
- Workstation modification/ redesign (e.g. alternatives workstation and postural interventions for prevention of musculo-skeletal symptoms among computer users)
- Short-term non-surgical management of CPT syndrome (local corticosteroid injections and oral corticosteroids) and modifications (e.g. use of a software as strategy to maintain a client's compliance with a injury prevention program)

In general

- Multi-component prevention campaigns (including educational brochures and broadcasting/ publication of television/ radio programmes and local newspaper articles containing expert advice on the subject)
- Identification and investigation of work situations at high risk for injury and formulating and disseminating prevention strategies to those who can intervene in the workplace by National/ Local Authorities
- Multifactor interventions (risk assessment, equipment provision, equipment evaluation/design, equipment maintenance, education and training, work organisation/practices changed, feedback, group problem solving/team building, review and change of policies and procedures, discussion of goals with clients, injury monitoring systems (return to work programmes), patient assessment systems, hazard registers, audit of working practices/risk assessments, physical fitness training, and medical examinations.)

Alcohol related injuries

Enforcement of legislation/ regulation

- Zero tolerance laws
- Sobriety checkpoints
- Retail alcohol monopolies – supply control
- 0.08 blood alcohol concentration laws
- Minimum legal drinking age laws
- Lower blood alcohol concentration laws for young/ inexperienced drivers
- Community interventions to enforce checks in alcohol sale outlets
- Breath Alcohol Ignition Interlock Device Program

Educational interventions- raising awareness

- Comprehensive multi-factorial community interventions
- Mass media campaigns
- Skills-based interactive CD-ROM intervention program
- School-based alcohol prevention program
- Intervention training programs for servers of alcoholic beverages
- Information- educational interventions to raise risk perception awareness

Brier interventions targeting to reduce harmful alcohol use

- Brief interventions for excessive drinking

- Behavioural Counselling Interventions in Primary Care

Drownings

Educational interventions/ raising awareness

- School based interventions
- Peer educational programs
- Key water safety messages that target parents, caregivers and supervisors of children

Safety devices

- Personal floatation devices
- Bath seats use
- Life vest use campaigns
- Fencing of outdoor pools
- Swimming pool alarms

Enforcement of legislation

- Pool safety inspections

Road traffic injuries

Enforcement:

- Graduated driver licensing
- Primary enforcement safety belt laws and enhanced enforcement of safety belt laws
- Cycle helmet laws
- Child restraint use legislation
- Mandatory helmet use
- Large increase in fines and rigid penalty scoring system that leads to driver license withdrawal. Raised speed limits on many roads, closer monitoring of adherence to the rules.
- Police enforcement programs
- Speed enforcement detection devices (speed cameras, radar and laser devices)
- Speed limits enforcement
- BAC limits enforcement through RBT at sobriety checkpoints
- Use of daytime running lights
- Sobriety checkpoints

Educational interventions/ raising awareness

- Helmet promotion campaigns and education
- Road safety education programs
- Multifaceted community educational booster seat campaign
- School based bicycle helmet education campaigns
- School based educational program for pedestrian safety
- Education program to increase the use of child restraints
- Information campaigns for infant car restraint use
- Promotion/awareness raising (public information and education campaigns)
- Parent based capacity building interventions

Environmental modification/ product modification

- Traffic calming schemes (reclassification of the street network; street closures, turning bans at junctions, staggered one-way regulations or street narrowing; speed reducing devices in local roads; installing or upgrading traffic signals at junctions, prohibiting kerb parking or widening the road.)

- Crashworthy infrastructure and road design: flexible roadside barriers and W-beam systems; Edge-lining; Shoulder sealing with (tactile) edge-lining; Clear zones; Guardrails or other barriers; Curve realignment; Pavement widening; Pavement resurfacing; barrier treatment; removal of hazards)
- Land-use and transport planning; road design; improving motor-vehicle crashworthiness; road safety audit; management of road infrastructure, low-cost remedial measures and crash-protective roadsides
- Separate lanes for bicycles and other slow traffic
- Safe walking and street crossing facilities for pedestrians
- Use of airbags in vehicles
- More widespread use of roundabouts

Safety devices

- Bicycle/ motorcycle helmets
- Age appropriate restraints: child safety seats and belt-positioning booster seats)
- Conspicuity measures, (use of reflective or fluorescent clothing, headlight operation, and colour of helmet, clothing, and motorcycle).

Falls (among the elderly)

- Targeted exercise and gait-training programmes: i.e. brisk walking, mixed exercise, osteofit, chronic eccentric training, nurse delivered, exercise plus medication withdrawal, tai chi with computerised balance training programme, balance-board, physical therapy, treadmill, and low – intensity.
- Prevention and treatment of osteoporosis: i.e. calcium and vitamin D, calcium and exercise, calcium and hormone replacement therapy, and alfacalcidol.
- Environmental safety measures: creating a physical setting – including homes, roads and institutions – that minimize the risks of injuries from falls and other causes.
- Multi-faceted falls prevention programmes i.e. using a combination of approaches – clinical, educational and environmental –with emphasis varying depending on circumstances.
- The wearing of hip protectors in vulnerable people – usually evaluated in the setting of a supervised residential institution.
- Periodic review of medication – especially psychotropic drugs as these are associated with side-effects causing confusion and postural instability
- General injury prevention measures, including the appropriate and timely analysis of information relating to the occurrence, prevention and monitoring of injuries in the population, the allocation of adequate resources, and the development of effective vehicles for delivery, will benefit older people along with other vulnerable sub-groups of the population.

The literature reviews also provide an assessment of less effective interventions.

The results of the conducted systematic literature reviews and the grey literature review contributed by our partners serve as the basis for the further identification of success factors and barriers (the questionnaire) as well as for the full version of the European Code against Injuries.

Module Two
Since the questionnaire has only recently been distributed and the European Code against Injuries is still being drafted, no results can yet be provided for this module.

Module Three
No assessment of results has yet been made of the outcomes of the Greek electronic questionnaire.

Italy
A collaborative group with professors of the universities of Milan, Turin and Udine interested in promoting injury prevention strategies has been established. This collaboration can be exploited in other aspects of the project, e.g. in the testing of the European Code against Injuries as well as to implement other initiatives aimed at disseminating the "culture" of injury prevention among medical and other university students.

The questionnaire developed for the medical/other university students has been developed and tested, and will serve as basis for the preparation of the questionnaire for investigating attitudes in the general population aged 18-24 years, as road traffic injuries and alcohol related injuries are prominent in this age groups.

3.4 Promotion/dissemination
The results of the systematic literature reviews for road traffic and alcohol related injuries were presented at the Twenty-eighth Pan-Hellenic Conference of the Hellenic Paediatrician Society, which took place in Crete, on September 2006 (Greece). Presentations are only available in Greek. Dissemination of the literature reviews is still under negotiation, as it will most likely be carried out in collaboration with the work package on dissemination.

Dissemination of the literature reviews is still under negotiation as it will most likely be carried out in collaboration with the work package on dissemination.

3.5 Next steps
During the second year, this work package aims to carrying out the tasks described in module two and three. Specifically, this includes:

Module Two [Sep06-Oct 07]

a. Identify barriers and success factors
The developed questionnaire has been sent (by e-mail) to the professionals for each of the selected practices. In case of non-response we intend to conduct structured interviews, which will also take place in case of missing data. The next step is to code and analyze the data, after receiving the responses to the questionnaire and to identify the barriers and success factors.

b. Customize selected best practices for individual member states (according to the most prevalent risk factors)
Based on the collected data, a matrix will be developed where identified barriers and success factors will be grouped. A group of experts from different member states will be asked to assess the barriers and success factors included in this matrix for their country or for their region. This procedure is aiming to elicit expert opinions about the

potential to customize selected practices for individual member states, given the relevance of the barriers and success factors within the experts' region. Based on the experts' ratings the recommendations regarding ways to overcome barriers will be customized by taking into account EU diversity.

c. Develop the European Code against Injuries [April 07-May 07]
Finalization of both the abbreviated and full version of the code consisting of 10 key messages that promotes the prevention of prioritized unintentional injuries amongst the general population.

Once the WP3 team will finalize the draft proposal of the abbreviated version of the ECaI, it is to be sent out for comments by injury experts and organizations (WHO, UNISEF etc). Experts will be asked to assess the messages, regarding the perceived severity of each respective injury, the availability of prevention measure, the effectiveness of proposed measure, the cost-effectiveness, and the likelihood of the prevention acceptability by EU citizens. Except from the abbreviated version of the code, its Report will include possibly explanations, statistic data, suggestions and recommendations after each message.

Assess the applicability of the code in the EU in terms of appropriateness, willingness to adopt the messages, barriers [via estimators that will be requested from the ad-hoc group of experts].

d. Pilot testing of the Code [Apr 07 – Jun 07]
The purpose of the pilot test is to test if the messages are appropriate for all the age groups and if they need modifications in order to be more convincing. The pilot testing of the code will be carried out in selected countries, most probably in Greece, Italy and Poland. It will be pilot tested among different age groups in order:

a. to test its face validity for each age groups,
b. to identify factors that may increase their willingness to adopt the key-messages, and
c. to identify factors that may prevent the adoption of the key-messages

e. Evaluate the Code based on the analysis of the data collected in the previous phase

f. Production of the progress report

g. Finalize the following deliverables:

- **Report**: European Code against Injuries (Best practices and recommendations for effective prevention of all type of injuries in all age groups)
- **Report**: Success factors and barriers to implementation of prevention related to all types of injuries.

Module Three

1. Complete the collection of data among medical and other students, analyse the data comparing attitudes of medical students in different countries, as well as medical and other students within Italy, and disseminate the results in a scientific report.

2. On the basis of the results of module one, to focus on one or two specific issues concerning risk taking behaviours and investigate attitudes of young people (age 18-24), investigating if and why they maintain that behaviour(s). The literature review performed will also help in the design of the study.

3. Combining the results from module one and those from WP2 on the burden of injuries in different European countries and, when available, information on risk factors prevalence, we plan to evaluate the maximal potential for prevention of injuries of different interventions in the age-group 18-24 in different areas.

Work Package 4: Development and assessment of strategic materials for implementation of recommendations for preventing falls among the elderly

Drafted by Eva Negri, Istituto di Ricerche Farmacologiche 'Mario Negri' Milan, Italy

4.1 Introduction

This WP started in month 7 (June 2006) and therefore this report concerns the first six months of the progress. The main objectives for this period were to perform preliminary work and to prepare the instruments that will allow the implementation of the operative phases of WP4, and, in the end, an evaluation of feasibility of large-scale interventions in older people in the European Union.

The areas that the work package aimed to address were:

1. Which interventions for the prevention of falls in older people are effective?
2. What resources are needed to implement these interventions?
3. What is the attitude of the target population, i.e. adults aged 65 years or over, towards these interventions?
4. What can we learn from the experience of those who have implemented such an intervention?
5. What is the prevalence of the risk factors addressed by specific preventive measures in the various countries, and hence, the potential for prevention of that measure?

4.2 Description of work

The first month (June 2006) has been devoted to retrieval of background material and organization of the first meeting of investigators of WP4, which was held in Milan on 3-4 July 2006 (see Appendix IV for the list of participants). At that meeting the general lines of the WP have been discussed, as well as the specific tasks for each module. During the meeting a list of interventions to prevent falls in older people in the general population has been prepared, for which there is adequate evidence of effectiveness, or that the group considered sufficiently promising (see Appendix IV). This list will serve as the basis for the following work.

After the meeting, the work has proceeded as follows:

Module 1

Task 1 *Classification of best practices*
A Cochrane review has evaluated effectiveness of best practices for the prevention of falls in the elderly. This review included study conducted up to the first half of 2003. Several new studies have been published since. In the first month of the project we have extended the literature search and checked i) if the new studies confirmed the results of the Cochrane review and ii) if the new studied provided more solid evidence for some types of preventive measures for which the results were based on only a very limited number of studies and thus inconclusive.

Using ACCESS software, a database form has been prepared for the extraction of data from the published papers. The main aim of this database is not only to classify interventions according to effectiveness, but also according to i) characteristics of the target population/setting of the intervention, ii) indicators of participation and compliance, and reasons for it iii) resources needed for the implementation and costs/ funding sources and iv) other general aspects like, how well the intervention is described, if a reason is given for the implementation and who was the responsible subject for initiating the process. Besides this information, we are also extracting from published papers data on effectiveness and contact details of the Principal Investigators (PIs). We are also evaluating whether the intervention meets the inclusion criteria for the Cochrane review. In fact, in this database, we plan to include interventions that did not directly evaluate effectiveness, if the preventive measures used in the intervention are among the list of interventions of interest for this WP. This ACCESS database has been tested with the input of the data from five published papers, and modified according to the results of this pilot test.

Task 2 *Investigating the barriers and facilitators from those who have implemented best practices*

The operative phase of this module can start only after the ACCESS database in task 1 starts to be filled in. One of the reasons is that we plan to print the information extracted and ask the investigators if the data extracted for their study is correct and if they can provide additional information. Meanwhile we have prepared a first draft of the questionnaire that we intend to present to the investigators. Given that WP3 has also prepared a questionnaire for investigating barriers and facilitators for other practices, we are now comparing the two questionnaires, in order to prepare the final version.

Task 3 *Search for unpublished implementations of interventions in selected EU countries*
The participants of WP3 are in the process of searching in the grey literature if there have been implementations of interventions for preventing falls in the elderly. The search is ongoing at present.

Task 4 *Prevalence of risk factors for falls in older people in the EU*

The aim of this task is to i) identify risk factors for falls and ii) search for prevalence data of risk factors in various countries of the EU. The reason is to estimate the potential for prevention of measures that act on a specific risk factor in different European settings.

The first step has been to investigate reviews on the topic in order to compare the methods used and the results obtained by different authors, We have identified 8 relevant reviews. After comparing them, we have decided to use as basis for our work the review performed by NICE (National Institute for Clinical Excellence, UK) that was recent and already considered the results of other reviews.

That review identified papers up to the end of 2002. We have performed a search on Medline using the same search strategy, as the NICE review, for papers entering Medline after 2002. This search has yielded 2603 papers. Some of the identified papers have been published before 2002, although they were inserted in Medline afterwards. The data of these 2603 papers were extracted from Medline and included in an ENDNOTE database. On the basis of the information available (mainly title, journal, MESH terms (keywords), and abstract) two independent reviewers have classified these papers according to the following scale: 1) not relevant, 2) probably not relevant 3) impossible to judge with the available information 4) relevant of limited importance 5) relevant of high importance. The papers score 2 or less by both reviewers have been eliminated, the papers scored 3 or more by both reviewers are in the process of being retrieved, and the remaining papers are in the process of being re-evaluated.

Module 2

Task 1 *Review of the literature on attitudes towards best practice in older people*

A search of the literature has been performed and several relevant papers have been retrieved. Given that the studies identified are almost all qualitative in nature the summary of results is not as straightforward as with quantitative studies. We are at present in the process of comparing the retrieved studies and developing a form for the summarization of the results.

Task 2 *Design of implementation of a study to collect original data on attitudes of older people towards interventions for the prevention of falls in the elderly*

The operative phase of this task has not started, given that it needs results from task 1. Meanwhile, in collaboration with the University of Athens, we have collected some questionnaires for the intervention of attitudes of elderly people, and we are comparing them in order to define the questionnaire to be used in the study.

We have contacted DOXA, the Italian branch of GALLUP, in order to evaluate feasibility of the interviews in different European countries and the times and costs. Given the satisfactory responses, in terms of times and costs, we plan to commission to DOXA the operative interview phase in a random sample of older people, while the Istituto “Mario Negri” staff, in collaboration with the other WP4 partners, will conduct all the other phases, i.e. design of the questionnaire, analysis of data and summarising and dissemination of results.

The choice of the European countries where to perform the study is still being negotiated. Given that most of the work done on the field comes from Northern European countries, we have decided to collect data for which there is less information, e.g. countries from Southern and Eastern Europe. We plan to collect data

in three/four different countries, to be chosen among Italy, Greece, Poland, Czech Republic.

Task 3 *Collection and analysis of promotional material*

The participants of WP4 are in the process of collecting promotional material for the prevention of falls in the elderly. This will be collected in the following way: The University of Athens, that is also coordinator of the EUNESE project, will provide the material collected within that project. When contacting the investigators (module 1 task 3 they will also be asked if they prepared promotional material for their interventions and if they can provide us a copy and the WP4 partners will look for material in their own country.

4.3 Results

The first main result has been achieved with the institution of collaboration between the different partners, which has led to a more precise structuring of this work package and a clearer definition of tasks.

Concerning the effectiveness of the interventions for the prevention of falls in older people, several new studies have been published after the evaluation performed by the Cochrane review. This is very important for the proceeding of the WP since the implementation of interventions on a large scale basis requires that there is sufficient evidence of their effectiveness. In fact, in the Cochrane review, the only type of interventions for which there were thousands of participants involved in several trials, were multidisciplinary/multi-factorial interventions, which constitute however, a mixed heterogeneous category, given that the preventive measures implemented in the various studies differed. For other types of interventions, the overall evidence was based at most on a few hundreds participants.

Our preliminary results show that results from the new studies are in agreement with the conclusions reached by the Cochrane review. In particular, for some measures, the limited evidence from the Cochrane review has been greatly strengthened by the new studies. For example, for Tai Chi group exercise there was only one study in the Cochrane review that found that the intervention was effective in preventing falls. Three additional studies have been published since, all confirming the effectiveness of Tai Chi group exercise.

Another result is constituted by the ACCESS database form for the classification of interventions according to several different aspects. We are now in the process of classifying the retrieved papers. This database will serve as basis for the evaluation of the published and other retrieved interventions, in order to evaluate several aspects that include the completeness of the information published. This database will also perform internal comparisons between interventions.

The preliminary results of the review of studies on the attitudes of elderly people has provided important information that will be useful for the design of the questionnaire of the study to collect original data on this topic. For example, it has clearly emerged from several qualitative studies, that the wording used in presenting the intervention are extremely important in determining its acceptance. Most people aged 65 to 74 years do not consider themselves “old”, but rather in the process of getting older, and they do not recognize themselves as targets of an intervention directed to “old

people". Moreover, one of the most important values in this age group is independence, and conveying the idea that the intervention may help to maintain independence can improve acceptance of an intervention.

4.4 Promotion/dissemination

Given the preliminary results, dissemination has not yet been spread to others outside of our group. We plan, however, to conclude the literature searches and summarize the results in the first half of next year, and to disseminate the results on the scientific literature, in meeting congresses, in the project's website and, for specific aspects of widespread interest, to the general public. The contribution of the European Commission will always be acknowledged. In general, all aspects of WP4 will be unified and connected together in the reports that have been set as deliverables 1-4, which are due in the course of the third year. However, we also plan to publish separately specific results obtained during the course of the WP.

4.5 Next steps

The objectives of work package 4 for the second interim year will be:

- To complete and summarize the results of the update of the review of effectiveness and summarization of results and preparation of a manuscript.
- To complete the extraction of data from the retrieved published papers, and from additional studies provided by the various partners, to summarize the results and prepare a manuscript.
- To prepare a final questionnaire and to contact the Principal Investigators of the studies in order to obtain additional information and their experience on barriers and facilitators influencing the implementation of their study.
- To complete the review on risk factors for falls in elderly people, to summarize the results and prepare a manuscript.
- To select a list of relevant risk factors for falls for which preventive measures has been proposed, and collect data on their prevalence in the population aged 65 years or over in the countries of the European Union.
- To complete the review of studies on attitudes o elderly people towards interventions for the prevention of falls, to summarize the results and prepare a manuscript.
- To prepare a final questionnaire and conduct the interviews in a random sample of people aged 65 years or more in at least three member states. To our knowledge, this will be the first study to collect quantitative data on this topic in a systematic way in different European countries.

For all reviews conducted, we plan to perform a further update at the end of 2007, in order to be confident to include the most recent information in the documents that will be prepared in 2008.

Work Package 5: Initiatives for interventions of the public health sector to prevent accidents among vulnerable road users (VRU)

Drafted by Mag. Claudia Körmer, Department Home, Leisure & Sports of the Austrian Road Safety Board

5.1 Introduction

Work package 5 deals with the potential role of the public health sector for a better protection of vulnerable road users. The main aims of work package 5 are:

- To estimate the total number of injuries to vulnerable road users in the European Union
- To develop indicators for the burden of injury of this group
- To develop a method by which corrected data and or correction rates can be integrated into existing statistical reporting about road accidents and to integrate a routine procedure for future reports
- To identify priorities for preventive actions
- To collect information on good practices on all political levels
- To test a decision making model to analyse intervention options and their effectiveness
- To implement and evaluate two interventions, one for child pedestrians in Austria and the other for two-wheelers in Greece

Objectives of sub work package 1:
Sub work package 1 is responsible for the coordination of the whole work package 5. The main aims of sub work package 1 within the first year were:

- To define the aims of the different sub work packages in detail
- To agree on a mission statement for the group of work package 5
- To draft the implementation plan of all sub work packages of work package 5
- To define possible synergies with other work packages of APOLLO
- To establish a progress and a interim report

Objectives of sub work package 2:
The overall aim of sub work package 2 was to draft a report showing the "Burden of injuries of vulnerable road users in the EU 25" in the first year. The main objectives of this report were to provide:

- An estimation of the total number of injuries of vulnerable road users in the European Union
- A development of VRU indicators and a method by which corrected data can be integrated into routine statistical reporting about road accidents in the future

Objectives of sub work package 3:
Sub work package 3 "Intervention report on political level" will start in February 2007 and end on 1st of February 2008.

The main objectives are to collect good practices and recommendations in road injuries tackling vulnerable road users highlighting priority areas and effective interventions on EU and national level, with policy recommendations. The Report focuses on good practices for policy makers.

Objectives of sub work package 4:
Sub work package 4 "Intervention targeting child pedestrians in AT" will start in November 2007 and end on 1st of November 2008. The main aims are to implement and evaluate an intervention targeting young pedestrians in Austria.

Objectives of sub work package 5:
The resource book will be a reference for how to plan and implement successful interventions for creating the safety for vulnerable road users at the community level. The main aims within the first year were:

- Defining book content & chapters, contacts made
    - Chapter one: data on VRU in Europe
    - Chapter two: good practice for prevention of injuries/safety promotion for VRU
    - Chapter three: Case study examples of successful interventions in Europe
- Additional resources researched

Resource Book Dissemination

- Dissemination strategies selected
- Relevant institutions in EU have been contacted
- Webpage hosted on safe community website & newsletter edited

Objectives of sub work package 6:

- Identification of relevant published literature on interventions that have been implemented in Greece for the prevention of injuries among the two-wheelers (motorcyclists).
- Exploration of the availability of data concerning injuries sustained by motor-vehicle two-wheelers (motorcyclists) and other data on road traffic and road traffic injuries (e.g. environmental factors.
- Work with the UK team on understanding the model and provide assistance concerning the model on two-wheelers (motorcyclists).
- Preparatory work for the intervention aimed to tackle injuries among the two-wheelers (motorcyclists) in Greece.

Objectives of sub work package 7:
The main objectives of the first year were: (i) to develop a mathematical modelling framework to evaluate the effectiveness of interventions to reduce traffic-related pedestrian injury and (ii) to parameterise the modelling framework using the available evidence. The specific tasks were (i) to carry out a comprehensive literature review on models of traffic-related pedestrian injury, (ii) to review the evidence base on vehicle traffic speed and traffic density patterns and pedestrian injury in London, and (iii) to develop and parameterise the overall pedestrian injury model. The work in the first year focussed primarily on developing the mathematical model of pedestrian injury. However a literature review on models of two-wheeler injury and relevant data were collated on two-wheeler injuries for London and for Athens (from our Greek partners).

5.2 Description of work
Description of work of sub work package 1:
Following work was done in the first year:

- The main aims of the different sub work packages were defined in detail by established work plans of each sub work package
- A mission statement for the group of work package 5 was agreed following the kick off meeting on 23rd and 24th of March 2006
- The implementation plan for work package 5 was established

- Possible synergies with other work packages of APOLLO were defined and the leaders of these work packages (WP2, WP3, WP4 and WP6) were contacted by email and invited to exchange relevant information on VRUs
- One progress and one interim report were established in 2006

Description of work of sub work package 2:
Following work was done in the first year:

- Literature was reviewed
- The content of the report was drafted
- The VRU data was collected in the different databases
- Additional data was researched
- The data was analysed
- Tables and graphs were established
- The text of the data report was drafted

The draft report was sent to injury experts of the WHO, Child safety Alliance, European Transport Safety Council (ETSC), data experts of the Austrian Road Safety Board, the project coordinator of APOLLO and the other members of the group of work package 5 for commenting on 5th of December 2006.

Description of work of sub work package 3:
Sub work package 3 "Intervention report on political level" will start in February 2007 and end on 1st of February 2008. No work had to be done for this sub work package.

Description of work of sub work package 4:
Sub work package 4 "Intervention targeting child pedestrians in AT" will start in November 2007 and end on 1st of November 2008. No work had to be done for this sub work package.

Description of work of sub work package 5:
Unfortunately, Mr. Rahim from the Karolinska University, Sweden has not communicated the activities being carried out within this sub work package, even after frequent attempts on behalf of the WP leader and main leader to contact him.

Description of work of sub work package 6:
Objective1:

- all relevant articles for Greece were identified and delivered to the UK team;
- synergies with the work that is currently undertaken in WP3 have been explored.

Objective 2:

- contacts with relevant organisations have been made;
- data on fatal and non-fatal injuries among the two-wheelers (motorcyclists) in Greece (including that concerning traffic volume and average speed in Athens) were gathered and this information was delivered to the UK team (tabular data); these data will be updated if new information becomes available from the National Statistical Service of Greece;
- currently, the exploration of the availability of data on type of collisions in crashes sustained by two-wheelers (motorcyclists) is undertaken.

Objective 3:

- there is a close collaboration between the University of Athens (UoA) team and the London School of Hygiene and Tropical Medicine (LSHTM) team in regards to the work on the development the model on injuries among the two-wheelers, with regular communication between collaborators

Objective 4:

- preliminary discussions about the type of intervention and planning have been made between WP5 partners.

Description of work of sub work package 7:
After reviewing the literature, a modelling framework for pedestrian injury was developed. The overall pedestrian injury model is divided into a series of sub-models associated with pedestrian behaviour, pedestrian environmental exposure to vehicle traffic, traffic speed and density, conditions for pedestrian-injury collision and severity of pedestrian injury. The model is based on a mathematical physics description of the pedestrian-vehicle-collision system. A pedestrian-vehicle collision occurs when there is insufficient time for a pedestrian to cross a road in the path of an incoming vehicle. The pedestrian behaviour model and the pedestrian injury model are characterised by parameters whose values are specific to the vulnerable population groups (children, adults, senior adults…). Likewise, the vehicle traffic and pedestrian exposure models are characterised by parameters whose values are specific to the environmental setting.

The pedestrian injury model can handle multiple interventions. The interventions can be targeted at different levels and can be applied separately or simultaneously. The targets of the interventions are: pedestrian behaviour, pedestrian environmental exposure and vehicle traffic. The effectiveness of an intervention is modelled mathematically through its modification of the values of the parameters of the relevant sub-models. For example interventions targeted at pedestrians (e.g. road safety education) would modify parameters of the pedestrian behaviour model. Interventions targeting vehicle traffic (e.g. introducing traffic calming measures) would modify parameters of the vehicle traffic model. Interventions targeting environmental settings (e.g. provision of pedestrian crossing) would modify the pedestrian exposure model.

The overall model is stochastic (probabilistic) in nature. The model simulates the crossing of roads by pedestrians, the probable collisions of pedestrians with incoming vehicles and the severity of injury of pedestrians due to impact with vehicles. The model treats pedestrian dynamics as a flow of particles of small mass crossing a rectangular strip (i.e. road). Pedestrians arrive at a (Poisson) rate at the road crossing and decide when and how to cross the road.

The rates at which pedestrians arrive at the rectangular strip and the times and speeds at which they cross the road strip are determined by the pedestrian behaviour model. Pedestrians are normally attracted to locations where it is safe to cross the road, say where there are traffic lights, zebra crossings or islands (in the middle of the road). One would normally expect more pedestrians to arrive at such “attractive” locations than at other less protected locations. The decision on when and how to cross the road

is also part of the pedestrian behaviour model. These would differentiate between "careful" and "daring" pedestrians, "adult and child" pedestrians.

The model treats vehicles as particles of large mass moving at relatively high speeds. The arrival of incoming vehicles and the distributions of their speed and mass are defined by the vehicle traffic model. When crossing roads, pedestrians either manage to avoid the incoming vehicles or collide with them. The probability of pedestrian-vehicle collision and the type of pedestrian injury resulting from the impact with a vehicle depend on several factors which are carefully modelled. The output of the overall pedestrian injury model is the absolute probabilities of severity of injury of each of the vulnerable population groups being considered. Effective interventions either reduce the probability of pedestrian-vehicle collisions and/or reduce pedestrian impact injury.

5.3 Results

Results of sub work package 1:
The results of sub work package 1 are:

- An established work plan for each sub work package
- A mission statement for the group of work package 5
- An implementation plan for work package 5 sent to the APOLLO coordinator
- Synergies with other work packages of APOLLO were defined and the leaders of these work packages (WP2, WP3, WP4 and WP6) were contacted by email and invited to exchange relevant information on VRUs
- Two established reports (progress and interim report)

Results of sub work package 2:
Previous publications on the number of injuries of vulnerable road users referring to road injury databases stated that around 600.000 vulnerable road users get injured in the European Union every year. The report "Burden of injuries of Vulnerable Road Users in the EU 25" shows that the burden of injuries of vulnerable road users seems to be much higher: an estimated 2.8 million vulnerable road users have an accident on public roads per year in the EU 25. This means a shocking figure of 2.2 million vulnerable road users who are not included in current road injury statistics. Around 60% of those injured are pedestrians and 28% cyclists. 16% of the total injuries of vulnerable road users happen to children under the age of 14.

The present report of "Initiatives for interventions by the public health sector to prevent accidents among vulnerable road users (VRU)", part of the umbrella project "Strategies and best practices for the reduction of injuries (APOLLO)" and led by the University of Athens, is the first attempt to illuminate the situation concerning the underreporting of injuries due to vulnerable road users and has the following main aims:

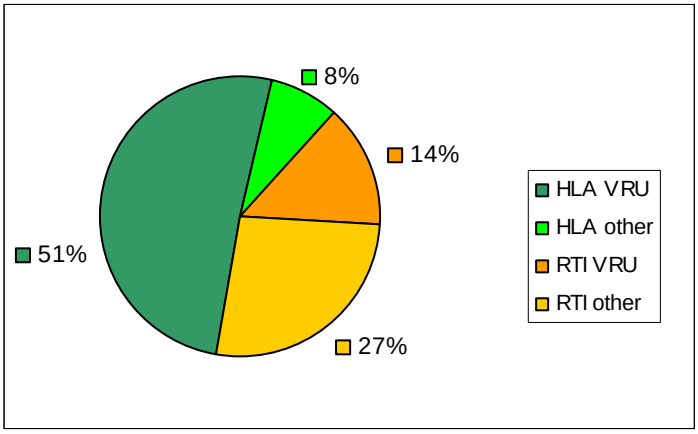
- To estimate the total number of injuries of vulnerable road users in the EU 25
- To suggest indicators concerning the injuries of vulnerable road users
- To propose a method how correction factors can be integrated into routine statistical reporting on road accidents in the future

Databases such as CARE (Community Database on Accidents on the Roads in Europe) and IRTAD (International Road Traffic and Accident Database) provide data

on road traffic fatalities and injuries as collected by police authorities. The underreporting of causalities involving non-motorised road users such as bicyclists and pedestrians and injuries without counterpart is considerable. This is a problem of data reporting that is well known by injury experts. The data of the European Injury Database (IDB) is collected in hospitals and contains data of injuries of the home, leisure and sports (HLA) sector including pedestrians and cyclists e.g. getting injured by having an accident without counterpart on public roads. The report "Burden of injuries of Vulnerable Road Users in the EU 25" gives a first comprehensive view on this issue by combining statistical data of the injury sectors home, leisure & sports (IDB) and road traffic (IRTAD/CARE). The tables and graphs of this report show an overview of the topic in general, by gender, age and road user, their injury risks etc.

To enhance the reporting of injures of vulnerable road users and to improve their safety in future, three core recommendations of the report are highlighted:

1. To include available sources on injuries of vulnerable road users such as the IDB in current road injury statistics of the European Commission and the Member States and correct the huge underreporting of their injuries by using correction figures for previously unreported cases
2. To reconsider priority setting in the road transport and public health sector on the basis of the large percentage of the total transport injuries which happen to vulnerable road users (an estimated 65%)
3. To develop structures that facilitate collaboration of different political sectors of the European Commission and Member States to combine forces concerning the protection of vulnerable road users



Division of injuries by vulnerable and other road users: 65% of the total injuries on the transport area happen to vulnerable road users and 35% to other road users

Results of sub work package 3:
Sub work package 3 "Intervention report on political level" will start in February 2007 and end on 1st of February 2008. There are no results so far.

Results of sub work package 4:
Sub work package 4 "Intervention targeting child pedestrians in AT" will start in November 2007 and end on 1st of November 2008. There are no results so far.

Results of sub work package 5:
Unfortunately, Mr. Rahim from the Karolinska University, Sweden has not communicated the results achieved during the first year of this project.

Results of sub work package 6:

Objective 1

Published articles on interventions that have been undertaken in Greece in order to reduce the burden of injuries among the two wheelers have been identified and delivered to the UK team that will need to study these results and their relevance towards tailoring the model that will be developed for the two-wheelers. Synergies with WP3 on best practices have also been explored in order to avoid duplication of work and with a view to include grey literature if available to our publication list.

Objective 2

The availability of data concerning road traffic injuries sustained by the two-wheelers (motorcyclists) in Greece (mortality, morbidity, exposure, traffic volume and speed in Athens) have been explored using the following data sources: World Health Organisation Statistical Information System, the National Statistical Service of Greece, the Ministry of Transport, the Department of Road Traffic Accidents of the Ministry of Public Order, the Community Road Accident database, Polytechnic University of Athens. Data concerning both fatal and non-fatal road traffic injuries have been identified and summarised in a tabular form. Variables included are: nationality of injured person, place of residence, category of road traffic user, whether helmet was worn at the time of injury, whether alcohol was an aetiological factor. Also, information on the number and type of motorcycles existing in Greece and Athens, specifically, was gathered. The exploration of data on risk taking behaviour and injury risk was also undertaken but the availability of such data is currently very limited.

Objective 3

Informal and formal contacts between UoA and LSHTM teams have been organised, including regular telephone conferences. The model on pedestrian injuries developed by LSHTM would be extended to cover the two-wheelers (motorcyclists). The model on two-wheelers, however, is different from the pedestrian one in terms of the types of collisions and behaviour. The next step would be to gather information on types of collision and decide upon what type of collision to be included in the model. It was agreed that when data for Athens are not available data for London would be used.

Objective 4

The intervention to be piloted in Greece was discussed in terms of type of intervention and timing. It was agreed that an educational intervention would be aimed for, focusing on risk taking behaviour related to injuries among the two-wheelers (e.g. alcohol use, helmet use, speed) and possible including safety messages also for pedestrians as to make the best use of the work undertaken in WP5 overall. It was agreed among WP5 partners including the leader, Mr. Rupert Kisser, that this intervention should start earlier (in January 2007) than initially scheduled. This would be most appropriate considering the need to make the most of the school/ academic year and reach as many students as possible during this educational intervention.

Results of sub work package 7:

The framework of the overall model is described with the aid of the following schematic diagram (Figure 1):

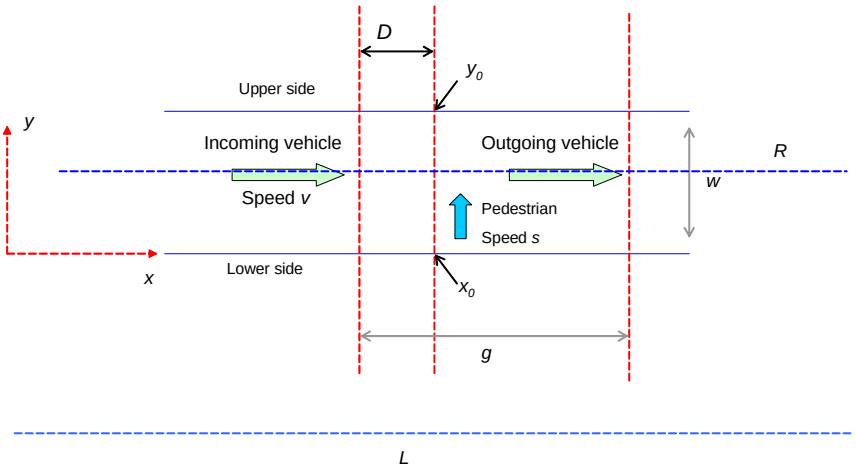


Figure 1. Traffic flow and pedestrian crossing

The geometry is two dimensional ($x-y$ plane). The road is of length L (total length of urban road network). Vehicles flow parallel to the x-axis from left to right in a straight line (R). Pedestrians arrive at the road at different times and locations. They cross the road perpendicular to the flow of traffic from the lower part of the road to its upper part. Vehicles and pedestrians are considered points in the plane.

Figure 1 shows two vehicles and a pedestrian crossing the road at location $(x_0,0)$ in the gap between the two vehicles (labelled as "incoming" and "outgoing", relative to the pedestrian) to reach location (x_0, y_0). The inter-vehicle distance (the gap between incoming and outgoing vehicle) is denoted by g. A collision occurs if the time taken by the pedestrian to cross the road of width w is less than the time taken by the incoming vehicle to travel distance D, the distance between incoming vehicle and the point at which the pedestrian crosses the road.

Figure 1 represents one sample of an infinite ensemble of stochastic realizations of the pedestrian-vehicle-collision system in an urban setting. It can be argued that this representation captures mathematically the key features of the system by allowing its key parameters to vary stochastically. The key set of parameters model parameters are: traffic speed or traffic density (traffic density is derived from traffic speed and vice versa), pedestrian-road crossing speed, width of urban roads, pedestrian arrival rate at crossing road, distance between incoming vehicle and the instance of pedestrian crossing.

A set of model equations which describe the physics of the overall model were derived. The inputs to the equations are the model parameters and the outputs are the probabilities of severity of injury for children, adults and senior adults. The results below show the parameterisation of the model and some of the model assumptions.

Simulations are underway to evaluate the impact of a number of interventions on the probabilities of severity of pedestrian injury for the three vulnerable population groups.

Transport for London and Department for Transport published reports and data on London were used to inform on the distribution of all the models parameters. Figure 2-6 show the default distributions of all the model parameters (assumed to be Log-normally distributed). Unless changed by the user, the model will run using these default distributions.

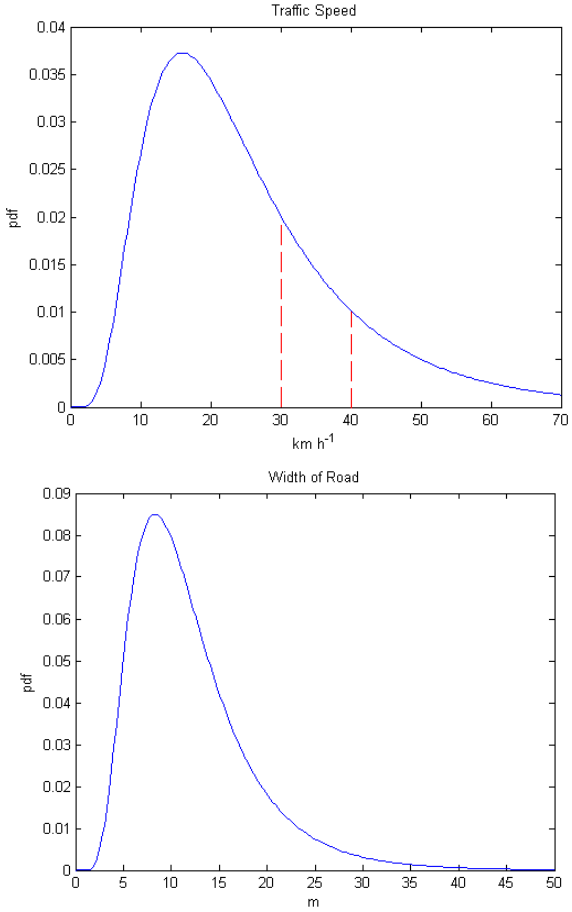
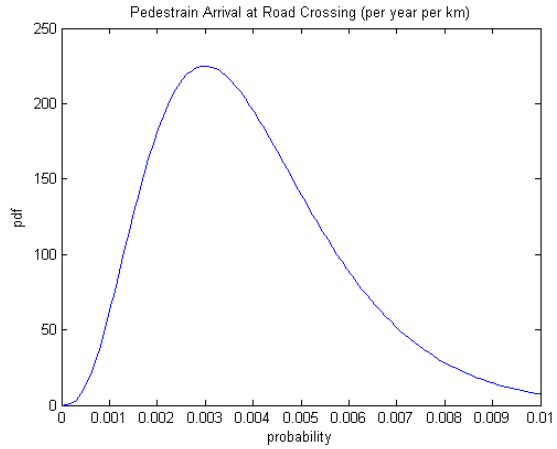


Figure 2. Traffic speed in urban areas.
Figure 3. Width of roads in urban areas.



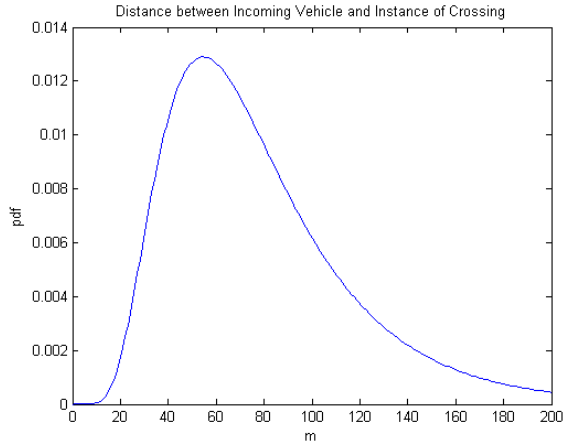


Figure 4. Pedestrian arrival at road crossing
Figure 5. Pedestrian decision to cross road

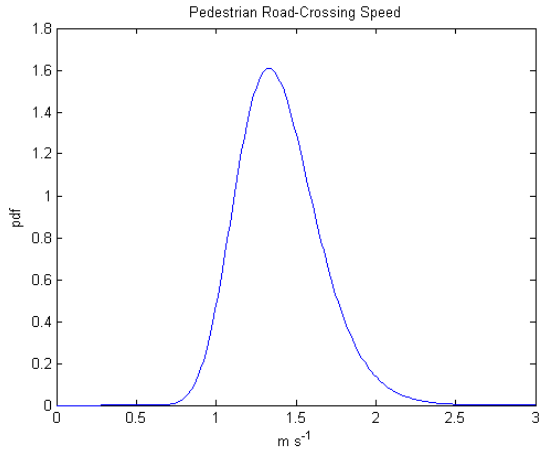
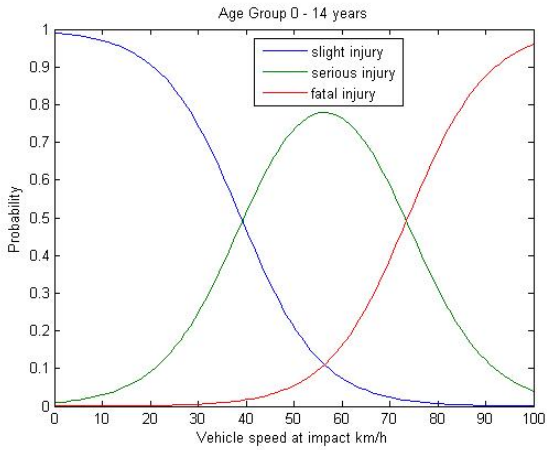


Figure 6. Speed of pedestrian crossing.

Figures 2-3 are concerned with the traffic conditions and environmental setting. Figures 4-6 are concerned pedestrian behaviour. Figure 2 simulates the probability density function (pdf) of traffic speed in urban areas. The interpretation of the pdf (for this and subsequent figures) is as follows: the area underneath the pdf curve gives the probability that the variable of interest is between the specified bounds. In Figure 2, the area bounded by the two dotted lines gives the probability that the traffic speed is

between 30 km h^{-1} and 40 km h^{-1}. Figure 3 simulates the pdf of road widths in urban areas. Figures 4-6 characterise respectively the arrival rate of pedestrians at road crossing, the decision to cross the road (represented in terms of the distance between the incoming vehicle and the instance that the pedestrian crosses the road), and the speed of road crossing. Figure 6 refers to observations on adults, the counterpart pdf for senior adults would be shifted to the left of the pdf in this figure. This is because senior adults cross the road at lower speeds.

The pedestrian injury model uses a number of default relationships which can also be changed by the user. For example, the model uses published empirical equations to characterise severity of injury as a function of vehicle speed (Figure 7-9).



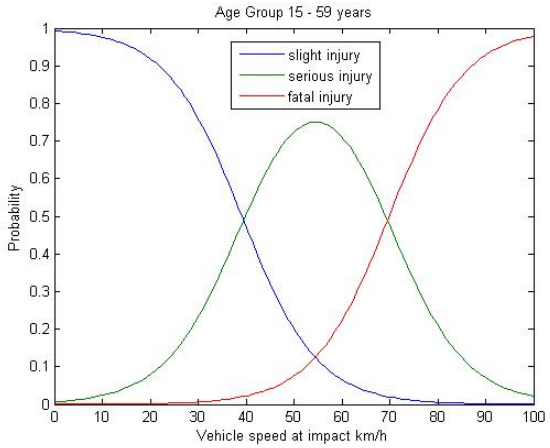
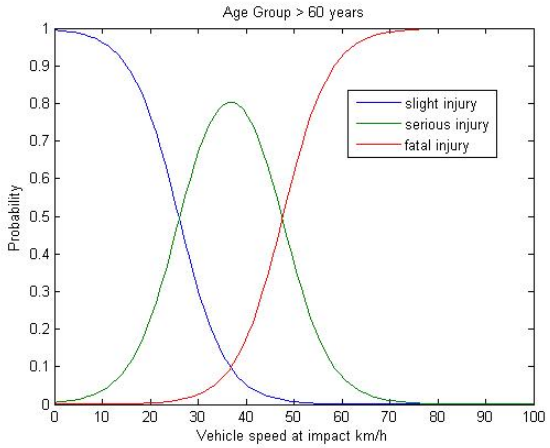


Figure 7. Davies et al (2001) Speed-injury (children)
Figure 8. Davies et al (2001) speed-injury (adults)



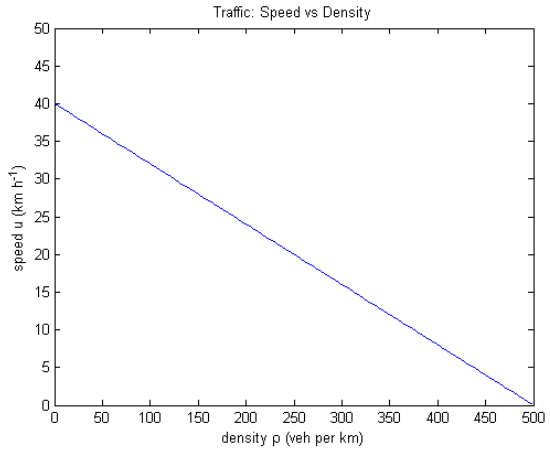


Figure 9. Davies et al (2001) Speed-injury (senior adults)
Figure 10. Traffic speed versus traffic density.

Corrections were made to these probability profiles to take account of relative changes in the mass of vehicles. In addition, the model uses the Greenshield equation to characterise the relationship between traffic density and traffic speed (Figure 10). Other more complex speed-density relationships could be used to capture the specific urban setting.

5.4 Promotion/dissemination

Promotion and dissemination of sub work package 2:
In the short term the draft report was sent to injury experts for reviewing. The report has acknowledged the funding from the European Commission at the cover page and in the text. Two articles describing the results of the study were published in the EuroSafe Alert. The articles have acknowledged the funding of the European Commission in the text.

In 2007 and 2008 it is planned to publish further articles concerning the results of this report in the EuroSafe Alert and on the homepage of EuroSafe (http://www.eurosafe.eu.com/csi/eurosafe2006.nsf). A EuroSafe task force on vulnerable road users under the lead of Claudia Körmer has been established. It is planned to disseminate fact sheets of important results of this report to the members of this task force which will consist of injury experts and persons representing relevant networks of the public health and transport sector. Together with the other main

deliverables of work package 5 it is planned to upload this report on the homepage of the European Commission for further dissemination to the Member States.

Promotion and dissemination of sub work package 3:
Sub work package 3 "Intervention report on political level" will start in February 2007 and end on 1st of February 2008. There was no dissemination of results so far. The handbook will acknowledge the funding of the European Commission on the cover page. Together with the other main deliverables of work package 5 it is planned to upload this report on the homepage of the European Commission for further dissemination to the Member States.

Promotion and dissemination of sub work package 4:
Sub work package 4 "Intervention targeting child pedestrians in AT" will start in November 2007 and end on 1st of November 2008. There was no dissemination of results so far. The report will acknowledge the funding of the European Commission on the cover page.

Promotion and dissemination of sub work package 5:
Unfortunately, Mr. Rahim from the Karolinska University, Sweden has not communicated the dissemination activities being carried out within this sub work package, even after frequent attempts on behalf of the WP leader and main leader to contact him.

Promotion and dissemination of sub work package 6:
The results so far concern the work within the WP5 so they were delivered to those that are directly involved in using these results (LSHTM team). All educational materials that will be developed as part of the intervention to be run in Greece will clearly state the contribution of EC to this project.

Promotion and dissemination of sub work package 7:
In the short term, a paper describing the model will be submitted shortly to a peer-reviewed journal. The paper will acknowledge the funding of this work from the European Commission. On the medium-term to long-term, dissemination of the work will be done through the use of the model. The main deliverable of this SWP is an operational model. A user-interface template will be provided to enable professionals unfamiliar with the underlying model to vary the parameter values and obtain revised results. The user will not be required to possess the underlying mathematical software on which the model runs and to which the interface provides access.

5.5 Next steps

Next steps of sub work package 1:

- To coordinate the different sub work packages by submitting of short reports and phone conferences of the sub work packages
- To perform controlling and budget
- To establish on interim report in 2007

Next steps of sub work package 2:

The deadline for comments is 8th of January 2007. The deadline for the final report and end of sub work package 2 is 1st of February 2007.

Next steps of sub work package 3:

Intervention info collected

- Additional interventions researched
- Activities & interventions categorized
- Activities & interventions Report drafted
- Activities and interventions Report feedback completed
- Activities & interventions Report edited
- Activities & intervention Report completed

Deadline of the draft report is 1st of December 2007. The final deadline is 1st of February 2008

Next steps of sub work package 4:

- Choose criteria of primary school needed for the intervention
- Select primary school in Vienna and establish school way maps

Next steps of sub work package 5:
Resource book

- Selection from data & interventions reports completed
- Resource Book written & edited
- Resource Book feed back completed
- Resource Book edited
- Resource Book completed (June 08)

Dissemination of the resource book

- Standard project presentation performed
- Dissemination Report feedback completed
- Dissemination Report edited
- Dissemination Report completed (Aug 08)

Next steps of sub work package 6:

- Assist LSHTM with the use of Greek data for the population of the model, as necessary.
- Organise and run the pilot intervention (educational campaign) in Greece, evaluate results.

Next steps of sub work package 7:
The main focus of the work over next year is to develop the operational version of the pedestrian injury model and the modelling framework for the two-wheeler injury. The immediate next steps are to simulate the impact of particular interventions on reducing pedestrian injury for the generic scenario based on London. This will be followed by setting the model to simulate Austrian urban scenarios and to investigate the impact of interventions relevant to Austria. An operational version of the model will be programmed with input from a software specialist. In collaboration with our

Greek partners, a modelling framework for two-wheeler injury will be developed. Data from London and Athens will be used to parameterise the model. A selected set of interventions will be simulated.

Work Package 6: Dissemination of project results and good practices in accident and injury prevention

Drafted by Dr. Wim Rogmans

6.1 Introduction

The aims of WP 6 of APOLLO are to:

- disseminate the operational and practical results in relation to shaping prevention policies and their implementation to the widest possible audience
- organize a series of panel meetings to establish a common basis for understanding and the appreciation of communal approaches towards injury control and safety promotion.
- deliver information on the state of the art, in copy and electronic format, on safety promotion programmes and actions in Europe at national and community level.

WP6 provides an opportunity for exchange among various stakeholders in the field of public health that have a special interest in injury. It will also connects with experts, interest groups, politicians and decision makers representing administrations, victim and consumer organisations, business and industry as well as science and academia, in order to profile key issues related to safety at home, school, work, on the road, and in the community at large (including violence and self-harm).

The main deliverables are (between brackets and in italics indicators for activities in 1st year):

- A sustainable network of European organisations and their national member organisations that play a role in implementing injury prevention policies in order to ensure the maximum input in deliverables and participation in different APOLLO WPs. [D.6.1] (1st year: completing an inventory of 36 relevant NGOs and producing a profile of each of them)
- A series of meetings, with participation of the APOLLO partners, in an EU wide forum. The panel meetings include key representatives of these European organisations and stakeholders [D.6.2](1 meeting to be held in 1st year)
- Briefings, i.e. short reports such as fact sheets, FAQ sheets, etc.) on state of art in Public Health actions on injury prevention and safety policies in Europe, including results and recommendations from relevant PHP projects (3 fact sheets to be produced in 1st year). Dissemination and publicity actions related to products delivered by the APOLLO project, in particular through direct mail to stakeholders in Europe and presentations on the website for the Working Party on Accidents and Injuries, now being fully integrated into the EuroSafe website [D.6.3] (1st year: development of up to date mailing lists for the main categories of stakeholders/ preparing the website of EuroSafe for profiling the APOLLO deliverables).
- A declaration on behalf of the network on priorities in injury prevention in Europe for all types of injuries in all age groups, by taking into account the relevant documents of the WP-AI. [D.6.4] (1st meeting with NGOs should

prepare the ground for the initiative to such a declaration to be prepared and issued in next phases of the project)

6.2 Description of work

Inventory of European NGOs
The following steps were foreseen for the first year of activities:

- development of a long list of relevant NGOs based on website information and existing contact lists available in EuroSafe, EC and other organisations;
- circulation of long list among the WP-leaders for comments and amendments. contacting each of the organisations identified, and drafting profiles of theses organisation as regards their vision, mission, objectives, background history, scope and areas of interest, structure of the organisation, main projects in charge and their relevant linkages with priority areas as identified in the EC Communication "Actions for a Safer Europe"
- after first compilation the collected information will be checked and verified with the liaison officers that have been identified in each of the NGOs included in the inventory.
- in December 2006 this should result in a fully verified package for uploading on the Working Party on Accidents and Injuries website.
- information package to be prepared for continuously informing these NGOs about the results and products delivered by the APOLLO work packages. Based on the established profiles, relevant selections of organisations will be informed and invited to connect with APOLLO and other PHP projects that serve mutual interests and synergies.

Coalition building
The above-mentioned inventory also serves to establish a information base for selection of proper organisations that should be involved in creating a coalition of European organisations dedicated to injury prevention. Such a coalition, or platform, is meant to lobby EU and national policy in view of enhancing policies and actions for the prevention of injuries. It shall operate as an open and flexible network of collaboration that interconnects existing structures and networks with thematic interests in injury prevention and safety promotion at EU level.

The following steps were foreseen in the process of creating the network:

- Analysis of current interests and activities of major NGO-stakeholders from all sectors, such as ETSC and OSHA, in view of their potential linkages with PHP.
- Definition of criteria for selecting NGOs with the best prospects for linkages and short list 8 lead organisations for starting consultations.
- Organising consultative meetings with about ten lead organisations (one meeting in 2006) in order to establish mutual understanding and a common vision on the role of PH in injury prevention and the opportunities for intersectoral collaboration.
- Identifying major issues in injury prevention that gives an opportunity for the group of European NGOs to cooperatively prepare a position paper.

The long list of NGOs was expected to serve as a base for selecting around ten NGOs that may act as forerunners in the field in view of establishing a stronger collaboration

between traditional safety organisations and the public health field. Based on a set of criteria, which has to be agreed by the APOLLO management team, it was expected to have around ten NGOs being eligible to be invited for a first consultation meeting to be organised in 2006.

The main goals of that meeting shall be:

- facilitating the establishment of the network of European organisations for injury prevention and safety promotion, and
- increasing collaboration between these organisations and European authorities and stakeholders.

The meeting's specific objectives shall be to:

- Set a common playing field, by reviewing the European situation, existing policy frameworks for injury prevention and activities carried out by the main European actors;
- Exchange information and share experiences about the on-going developments and challenges experienced;
- Inform the meeting on products developed through the EC-Public Health Programme, in particular the APOLLO-project;
- Agree on the goals, objectives and strategies for an informal network of a European network for injury prevention and the next steps to be taken.

What the future status of the Coalition will be depends fully on the outcome of the exchange and debate with the Euro NGOs. For the time being we expect that we can achieve collaboration by informing the respective networks of these NGOs on the APOLLO and related projects, by engaging interested NGOs in a few of our activities and visa versa, and by issuing a joint statement (see section on declaration) towards European and/ or national authorities. At the end of the project we will assess the further perspectives of the coalition in view of the ambition and expectations prevalent among the coalition members.

Briefing documents

The purpose of the briefing documents, or fact sheets, is:

- to motivate public health workers to initiate injury prevention actions that are inspired by good practices elsewhere;
- to explain to third parties the role that the public health sector can play in injury prevention in general and in relation to specific topics of interest.

In the Implementation plan for APOLLO a list of eight topics has been agreed on beforehand, but there is room for flexibility. The briefing documents will build on the EC-Communication "Actions for a safer Europe" and the WHO-Euro resolution on Injury prevention in the region as well as the results delivered though APOLLO and related PHP projects. It will provide more specificity to the general issues and priorities identified in both strategic documents and help to disseminate the latest state of play in injury prevention and research.

The target audiences of these fact sheets are:

- members of the Working Party on Accidents and Injuries
- national Institutes of Public Health and their respective country networks

- European organisations and agencies that are working on specific safety sectors (such as road safety, work safety and the prevention of violence) and their national member organisations

Each document will be:

- 6 pages A4/in print
- max. 2.000 words/illustrated with figures, boxes and photographs
- easy to read for decision makers (plain English/ no technical terms)

The briefing documents will be prepared by EuroSafe in consultation with experts in the respective fields that relate to the issues presented in these documents. A major contributor to this drafting process will be the World Health Organisation, in particular the Office of the European Region, which has a wealth of information available as well as experiences with respect to advocating the public health approach in injury prevention and safety promotion.

The APOLLO management team will be involved in the refinement of the topics foreshadowed for these briefing documents and drafts of outlines. Regarding the text for each fact sheet this will be circulated for comments among the APOLLO management team as well as representatives of the relevant target audiences.
As regards the further dissemination tasks to be fulfilled through WP 6 in the framework of the APOLLO project, a dissemination plan shall be developed in the first year based in the inventory that WP 1 will produce as regards the deliverables and products that will result from each of the WP's. Such a dissemination plan shall also include specifications for each of the products:

- main target audience to address (and basic characteristics as volume, level of interest and understanding, main messages to pass, expected outcome)
- means of addressing (electronically, in print, physical meetings)
- additional promotion efforts to invest along with the product

Declaration
This part of the project relates strongly to the coalition building efforts in liaison with European NGOs. Depending on the outcome of these efforts and the outcome of the first meeting of European NGOs more precise targets for joint advocacy and a more precise plan will be drawn for joint lobby activities.
Part of the activities foreseen are:

- Drafting and reviewing of statements and by the end a set of policy recommendations (declaration) on behalf of the Euro-NGOs.
- Promotion of statements/ position paper (declaration) at relevant events (conferences) and in meetings with MEP, EC representatives and governments.

6.3 Results

Inventory of European NGOs
Basic research through websites and contact lists established within EuroSafe in a 'long list' of 36 organisations:

Transport

- European Transport Safety Council (ETSC)
- International Road Safety (PRI)
- European Federation Road Traffic Victims (FEVR)
- European Cyclists Federation (ECF)
- Forum of European Road Safety Research Institutes (FERSI)
- European Road Transport Research Advisory Council (ERTRAC)
- Forum of European National Highway Research Laboratories (FEHRL)
- European Conference of Transport Research Institutes (ECTRI)
- Global Road Safety Partnership (GRSP) in Europe
- European Conference of Ministers of Transport (ECMT)

Work

- European Agency for Health and Safety at Work (OSHA.EU)
- European Network Work Place Health Promotion (ENWHP)
- International Social Security Association (ISSA) – committee on Education and Training for Prevention
- International Labour Office (ILO)

Consumer Safety

- EuroSafe
- Anec
- Prosafe
- BEUC

Violence Prevention

- WHO-Violence Prevention Alliance
- Women against violence Europe (WAVE)
- European Observatory of Violence in Schools
- The White Ribbon Campaign in Europe
- European branch of International Society on Prevention Child Abuse and Neglect (ISPCAN)
- Coordination Action on Human Rights Violations (CAHRV)

Suicide Prevention

- European Network on Suicide Prevention and Research (ENSPR)
- European network for suicidology
- European Branch of International Society for Suicide Prevention (IASP)
- European Alliance against Depression (EAAD)
- Mental Health Europe (MHE)
- WHO-Mental Health Network

Other relevant organisations

- WHO-Office of the European Region, Special programme on Health and Environment
- International Federation of Red Cross and Red Crescent Societies, Regional Office for Central and Southern Europe
- Council of Europe

- International Society for Child and Adolescent Injury Prevention (ISCAIP)
- European Child Safety Alliance (ECSA)
- European Public Health Alliance (EPHA)
- European Public Health Association (EUPHA)
- European Safe Community Network (ESCON)

In the course of 2006 theses 36 NGOs have been successfully contacted and screened as regards their aims and objectives, membership base, scope of activities and promising linkages with priority issues within the APOLLO project as well as with the main priorities as defined in the EC Communication on injury prevention and safety promotion.

After the first compilation the collected information is checked and verified with the liaison officers that have been identified in each of the NGOs included in the inventory. In December this has resulted in a fully verified package for upload on the dedicated Working Party on Accidents and Injuries website.

An information package is in preparation for these NGO, in order to inform them on the ongoing Public Health initiatives in the injury prevention field and to engage these NGOs in a more systematic dissemination of information that result from PHP projects and the APOLLO project in particular. The package will include:

- Fact sheet on PH role in injury prevention
- Information on recent initiatives on behalf of EC and WHO
- Specific information on APOLLO project
- Information on the coalition building efforts of WP6
- Invitation to get connected and feed back suggestions for join actions.

Coalition building

As expected, the inventory provided a most helpful information base for selection of proper organisations that should be involved in creating a coalition of European organisations dedicated to injury prevention.

The data base with the 36 NGO-profiles made it possible to analyse current interests and activities of these NGO-stakeholders from all sectors, such as ETSC and OSHA, in view of their potential linkages with PHP.
In the second half of 2006 EuroSafe has identified, with the help of the WP leaders, 8-10 potential NGOs that meet the jointly defined criteria:

- being non-governmental and a non-profit entity
- having a membership base that is sufficiently rooted in EU member states
- having objectives that relate strongly to injury prevention and safety promotion
- representing the voice of professionals dedicated to safety

Given these criteria the following organisations have been found eligible for becoming invited for joining the platform:

- European Transport Safety Council (ETSC)
- European Federation Road Traffic Victims (FEVR)
- International Social Security Association (ISSA) – Committee on Education and Training for Prevention

- Anec, the coordinating Body for Consumer representation in Standardisation
- Violence Prevention Alliance
- European Alliance against Depression (EAAD)
- European Safe Community Network (ESCON)
- European Public Health Alliance (EPHA)
- European Public Health Association (EUPHA)
- European Society Emergency Medicine
- European Society Paediatric Intensive Care

In September, EuroSafe informed all these organisations on the APOLLO project and its role within broader initiatives set in place by WHO and EC. In a follow up message sent out in October, EuroSafe sounded the interest of the respective NGOs in being involved in a consultation meeting and prepared the first meeting on 21 December 2006, held with the assistance of the APOLLO MT . The main goals of the meeting were to facilitate the establishment of the network of European organisations for injury prevention and safety promotion, and to increase collaboration between these organisations and European authorities and stakeholders. In the next interim report the results of this first consultation meeting will be presented.

What the future status of the Coalition will be depends fully on the efforts that the Euro NGOs are prepared to invest in this process.

Briefing documents
The list of topics included in the APOLLO-Implementation plan includes the following issues:

- The role of Public Health in injury prevention
  (challenges of inter sectoral collaboration)
- National plans for injury prevention
  (how to develop plans that work)
- The challenges of inequalities in injury risks
  (how to address socio-economic vulnerable risk groups)
- Alcohol and substance abuse: major injury risk factor
  (guidelines for interventions)
- Preventing violence in youth
  (public health approach being complementary to traditional justice and police response)
- Vulnerable road users
  (better understanding of risks and their prevention)
- The burden of injuries
  (main messages that arise from the work of WP2)
- Falls among elderly
  (main messages that result from WP3)
- *To be decided*
  (a still to be selected topic that result from the work of WP4)

In the course of 2006 this list of topics has been discussed a number of times in the Management team of APOLLO. It is now intended to have two of the eight fact sheets being devoted to issues that specifically are related to APOLLO outcomes, one might be the issue of fall-prevention and another may be the issue of the burden of injury.

These may replace the latter two topics (Community safety/ Mobility and physical activity).

Work has started in the second quarter of 2006 on the drafting of outlines for the first three fact sheets and after agreement on the outlines, the main text for these three documents. By the end of 2006 we (hopefully) succeeded in completing the consultation on these three documents and will be able to disseminate them through the various channels.

Negotiations with the World Health Organisation resulted in their agreement to have them endorsing the series of fact sheet and to allow the WP 6- leader to include the WHO logo in conjunction with those of CEREPRI and EuroSafe on the fact sheets. Given the authority and credibility of the WHO, this will be a major help in promoting the use and further dissemination of the fact sheets by the relevant stakeholders organisations.

As regards drafting the dissemination plan for the other deliverables and products that result from APOLLO, an invitation has been sent out by WP 1 to all WP leaders to provide the proper information. This inventory will provide the base for WP 6 to draft such a dissemination plan early 2007.

WP 6 has in the meantime started to identify major channels and stakeholders for further dissemination of information on public health programme and the outcomes of APOLLO. The following categories are in scope:

- WHO network of Focal Persons;
- National Ministries of Health;
- Relevant European Commission departments/ units
- Members of European Parliament;
- Regional Delegations;
- European NGOs
- National public health institutes
- European printed media (magazines/ newsletters)
- Professional Journals with a strong European focus and base.

Currently we are developing an information data base with all the latest information on the composition of these groups and categories, including the individualised names and address data.

Declaration
This part of the project awaits further development and shaping in the course of early 2007. The consultation meeting in December 2006 has given indications as regards feasibility targets we can set in this respect and the way towards these targets. A more precise plan of work will be developed in the first quarter of 2007 for discussion and agreement in the APOLLO management team.

6.4 Promotion/dissemination

The APOLLO project has been presented and promoted in various informal meetings being held in a European perspective and at formal meetings held by EuroSafe (1st European Conference on Injury Prevention) and WHO (2nd Meeting of National Focal Persons). Also the European NGOs have been informed in formal and written correspondence on the APOLLO project and its role within the broader spectrum of

actions initiated by EC and WHO. A more extensive set of publicity and dissemination actions will be set in place in the course of 2007, when agreement of the dissemination plan has been reached and the first products from the APOLLO projects are becoming available.

6.5 Next steps

Network/ coalition building
January- June 2007:

- information on NGO's will be further updated and completed with an inventory of relevant projects that relate with the RC Communication priorities in injury prevention and the APOLLO project
- report on the 1st meeting of NGO's and preparation of the 2nd meeting
- mail out of information to the wider group of NGO's and inventory of feed back solicited.

July – December 2007:

- 2nd NGO meeting featuring the following topics:
- Discussion and agreement on joint vision & mission of FaSE-network of European NGO's
- Consensus building on short-term plan of work for the group (2006-2008)
- Meeting with representatives of relevant Commission services
- Preparations for the 3rd meeting to be held early 2008, including also a meeting with representatives of European parliament

Briefing documents
January- June 2007:

- preparation of content for 2 new fact sheets
- dissemination of three fact sheets produced in 2006

July – December 2007:

- text editing and production of 2 fact sheets developed in first half 2007
- marketing and dissemination of fact sheets # 1-5
- preparation of content for 2 new fact sheet.

Dissemination activities
January –June 2007

- Development of a dissemination and publicity plan based on input from WP 1-6 as regards products and deliverable expected to become available in 2007-2008.
- Finalising database of relevant stakeholders including mail addresses in view of targeted promotions and mails out.
- Development of structure of web site section devoted to APOLLO project.
- Upload of basic information for APOLLO-related site section, including among others:
  - Fact sheet on PH role in injury prevention
  - Information on recent initiatives on behalf of EC and WHO
  - Specific information on APOLLO project
  - Information on the coalition building efforts of WP6
  - Invitation to get connected and feed back suggestions for join actions.

July – December 2007

- text editing on reports and other texts delivered by WP's for uploading on website and for further dissemination
- uploading of information on site and alerting relevant stakeholders on latest updates
- preparations of a publicity launch at EP

Declaration

January –June 2007:

- desk research and collection of basic background information for developing a Declaration on behalf of a multi-sectorial interest group of NGO's
- drafting an outline for a declaration and sounding NGO's views and opinions on the envisaged content of the declaration document for the discussion at June meeting of NGO's

July – December 2007:

- drafting the declaration in accordance with comments and suggestions received at June meeting.
- bilateral consultations with NGO's on the content of the first draft

Conclusion

Summarizing, all tasks in operation during this first year have been successfully completed as planned within the approved timeframe and budget. The APOLLO team will adhere to the contract by continuing to carry out all tasks and activities as stated in the consolidated work plan for the second interim year.

Appendix I

WP1: Terms of Reference

1. Work Package Leaders:

1. Responsible for the coordination, execution and timely completion of all deliverables of their work package as stated in the work plan and contract. This includes the deliverables of the other associated beneficiaries participating in their work package.2 Failure to produce deliverables may result in withholding of payments. Deliverables submitted should meet EU standards in order to receive payment. In the event that a task as stated in the individual work plans has been delayed or missed without the advance agreement of the Project Coordinator, the Project Coordinator may request a revised work plan and budget from the respective Work Package leader.
2. Act as the liaison between the Project Coordinator (WP1 – UoA) and associated beneficiaries collaborating in their Work Package3 as well as subcontractors who are part of WP leaders' individual budgets. However, communication among associated beneficiaries or with subcontractors of the associated beneficiaries relies on the associated beneficiaries and not the Work Package leader.
3. Provide support to the Project Coordinator in monitoring the work progress by producing semi-annual progress reports (technical and financial) for the actions of the entire Work Package.
4. Participate in drafting the interim and final reports (both technical and financial) by providing reports on their Work Package, which include reports from the other participating associated beneficiaries.
5. Review, comment and agree upon interim and final deliverables / reports before submission to the EC.
6. Responsible to ensure current tasks have taken results/outcomes from past projects/studies into consideration.
7. Identify potential problems in an early stage and notify Project Coordinator in order to identify solutions. Provide recommendations on possible solutions and collaborate with Project Coordinator to identify these solutions.
8. Attend Work Package leader meetings and participate in telephone conferences.
9. Participate in dissemination activities by promoting APOLLO messages/deliverables through existing networks and contacts, in order to ensure the widest possible network is being reached.

[2] Work Package leaders are responsible to ensure tasks are being carried out by the associated beneficiaries in their work package. Failure to produce a deliverable by an associated beneficiary will hinder the next payment of that specific associated beneficiary. Work Package leaders should notify the Project Coordinator of the ongoing working process of the associated beneficiaries and payments will be based on the outcome of these reports.

[3] **WP2**: associated beneficiaries are: UoA-EL, CSI –NL, ISS-IT, LES-UK / **WP3**: associated beneficiaries: IFT-IT, FPZ-PL / **WP4:** associated beneficiaries: UoA –EL / **WP5:** associated beneficiaries: KA-SE, LSHT-UK, UoA-EL / **WP6:** N/A.

2. Associated Beneficiaries, who are not WP leaders:

1. Responsible for the execution and timely completion of their work plan and deliverables. Failure to produce deliverables may result in withholding of payments. Deliverables submitted should meet EU standards in order to receive payment. In the event that a task as stated in the individual work plans has been delayed or missed without the advance agreement of the Work Package Leader and Project Coordinator, the Project Coordinator may request a revised work plan and budget from the respective associated beneficiary.
2. Communicate regularly with their Work Package leader about the progress of their work plan. Solely responsible to communicate with their subcontractors.
3. Responsible to ensure current tasks have taken results/outcomes from past projects/studies into consideration.
4. Identify potential problems in an early stage and notify Work Package leader in order to identify solutions. Provide recommendations on possible solutions and collaborate with Work Package leader and Project Coordinator to identify these solutions.

Under the guidance of the Work Package leader, associated beneficiaries are to:

a. Complete semi-annual progress reports (technical and financial) and submit to Work Package leaders on provisioned dates.
b. Participate in drafting the interim and final reports (both technical and financial) by providing reports on their sections to respective Work Package leaders.
c. Review and comment on interim and final deliverables / reports.
d. Participate in dissemination activities by promoting APOLLO messages/deliverables through existing networks and contacts, in order to ensure the widest possible network is being reached.

3. Project Coordinator (Main beneficiary)[4]:

1. Carry out the day-to-day coordination of the project.
2. Provide assistance regarding technical, financial and administrative issues to all partners.
3. Act as the intermediary for all communication between the beneficiaries and Commission. Communicate regularly with Work Package leaders via emails, telephone conferences and meetings.
4. Prepare the administration for Work Package leader meetings (before and after meetings).
5. Ensure timely fulfillment of all obligations (progress reports, telephone conferences, meetings, etc) of the APOLLO project.
6. Ensure work packages are carried out according to the timetable (in collaboration with Work Package Leaders).
7. Coordinate the drafting/editing of the interim and final reports (both technical and financial) in collaboration with the Work Package leaders. Coordination also includes consolidating the different reports/materials from each Work

[4] The main beneficiary shall also carry out the tasks stated in Article 1.2.1 of the APOLLO Contract

Package leader and ensuring it meets the EU requirements. Responsible for the timely submission of the interim/final reports to the European Commission.

8. Develop methods/infrastructure, where needed, to facilitate communications and workload.
9. Set up quality control procedures as necessary (in collaboration with the Work Package leaders) and ensure the quality of deliverables is up to EU standards
10. Resolve any conflicts that should arise, in collaboration with Work Package leaders.
11. Participate in dissemination activities by promoting APOLLO messages/deliverables through existing networks and contacts, in order to ensure the widest possible network is being reached.

WP1: Minutes: First Work Package Leaders Meeting

Date: June 23, 2006 / Time: 9h30 – 16h30
Location: Road Safety Board / Kuratorium für Verkehrssicherheit, Room 1, Bereich Heim, Freizeit & Sport, Schleiergasse 18, Vienna, Austria

Participants:
WP1: Eleni Petridou, leader (via telephone), Stephanie Anast, coordinator
WP2: Maria Segui-Gomez, leader
WP3: Kiki Petroulaki, coordinator
WP4: Eva Negri, leader
WP5: Rupert Kisser, leader, Claudia Koermer, executive
WP6: Wim Rogmans, leader

1. Welcome and overview of general progress
Stephanie Anast

A presentation of the tasks carried out by WP1 was made together, which also included an overview of the project's budget, areas of synergies, dissemination policy and activities.

Main points of discussion are listed below:

General

- Consolidated progress report to be sent to all members of the Working Party on Accidents and Injuries, the Network of Working Party leaders, and the APOLLO network (WP1 will do this).
- Consolidated progress report should provide APOLLO network with adequate information about the developments, therefore a meeting with all APOLLO members (25+) is not necessary – nor feasible due to the limited resources and time.
- Emails are preferable for internal communication, whereas other means (eg. web-boards) are not excluded. Public information may also be disseminated through the website developed within the Greek Secretariat for the Working Party on Accidents and Injuries (WP AI).

- Telephone conferences between the work package leaders will continue to be scheduled on a bi-monthly basis. The focus of these calls will shift from presenting progress to presenting major milestones (1-2) that have been accomplished during the two month period as well as identifying specific issues that should be addressed.

The submission date of the second progress report is scheduled for May 14, 2007 (and not November 13, 2006).

- Interim report: Submission date from all WP leaders is December 8, 2006. WP1 will develop a template for the technical report in order to standardize the format for all 6 work packages. Once developed (in mid August), it will be distributed to WP leaders to approve and to be completed.
- A dissemination scheme will be developed (by WP1) for all deliverables of the APOLLO project. This will include information on each deliverable such as: who the target audience should be, what we want to achieve by disseminating it to the target audience, and what method will be used to disseminate the deliverable. This scheme will be sent to all WP leaders before the end of July to comment/approve. Once completed, it will be adapted to WP6 to execute.

Budgetary

- Article I.4 of contract states "Payment of each further pre-financing payment may not be made until at least 70% of the previous pre-financing payment for the action has been used up"
- Advised not to present more than 40% in category "I3. Applicant's financial contribution" of Annex II as Commission will then reduce the 60% contribution in order to balance the entire budget.
- Missing invoices for first payment from Rahim, Dowie and Zatonski. (Note after meeting: J. Dowie has sent invoice and payment is being processed.)
- Respective leaders will collect and send to WP1 coordinator.
- Missing budgetary progress report for IRF, ISS and FPZ. Respective leaders will ensure this information is presented in the interim report.
- Activities outside of the EU should not be included in budgets –EU will not approve. If someone wants to be reimbursed for his/her activity which took place outside of the EU, a request should be made to the EC (via WP1).

Synergies

- Maria Segui-Gomez (WP2) will contact David McDaid to organize possible collaboration with WP4 and WP5 since he will be assessing the cost effectiveness of strategies to prevent/reduce the consequences of falls and road traffic accidents.
- Kiki Petroulaki (WP3) will work closely with WP4 and WP5 regarding the gathering of best practices and assessment of barriers.
- Claudia Koermer (WP5) will contact Yousif Rahim to ensure that synergies exist with WP6 in regards to the dissemination strategies selected for the resource book.

Dissemination policy for scientific documents

- Article II.5 of the contract states "Any communication or publication by any of the beneficiaries about the action, including at a conference or seminar, shall indicate that the action has received funding from the Community."

- The EC must be acknowledged on all publicized documents together with reference to the APOLLO project, including the grant number 2004119.
- In the terms of reference document, point 9 under the section main beneficiary it states - set up quality control procedures as necessary (in collaboration with the Work Package leaders) and ensure the quality of deliverables is up to EU standards. Discussion was held about possibly establishing a procedure where documents (eg. abstracts sent to conferences) will be sent to WP1 apollo@med.uoa.gr in order to maintain a record of dissemination activities.
- A form will be developed by WP1 to facilitate the above two points and distributed to all WP leaders.

2. Progress of work packages

WP6: Dissemination
Wim Rogmans

The coalition building and draft fact sheet were presented to the group. Main points of discussion are listed below:

- Wim will put in writing the differences between the APOLLO coalition and EuroSAFE and send it to apollo@med.uoa.gr by July 24/06.
- Coalition building:
    - Aim is to develop a coalition which we will work together to promote injury prevention (and the results of APOLLO).
    - Eight (8) NGO's to be selected from long list. Yet, the other organizations will not be excluded - communication will be encouraged with these organizations as well.
    - The idea is to expose these organizations to injury prevention from a public health perspective.
    - Government bodies already have established networks and therefore, our efforts will be directed towards the NGOs.
    - Good to include a medical/trauma association and one should be picked that meets with all the criteria. (Note after the meeting: WR is already in contact with Euro Society for Emergency Physicians).
    - It is suggested to include an interest group for seniors in the EU; this suggestion was not accepted for the time being.
    - Recommended to include European Agency at Work instead of ENHWP. However, considering that this European agency is a governmental body, it cannot be included in the NGOs.
    - Need to include a mental health organization, whereas for violence an NGO specialized in this domain should be also sought.
    - WHO focal points to be included in communication actions (this is facilitated by WHO being represented in the steering committee) as well as the Safe Communities.
    - Recommended to include 10 NGO's in stead of 8, as current budget estimated by WR allows full participation.

- Fact sheet: The first draft will be sent out for comments before July 24/06. It was suggested to include a morbidity map which WP2 is working on and aims to be finalized by mid October. The same publication policies will apply.
- Good idea to use fact sheets also as press releases.

WP5: VRU
Rupert Kisser, Claudia Koermer, Dorit Smolka

The aims and progress of work package 5 were presented. For further information, please reference the presentation. Main points of discussion are listed below:

- Estimates for pedestrian road injuries are difficult to obtain. Maria offered to run e-code queries for specific road injuries in order to overcome this difficulty.
- It was decided that it is needed to develop a standardized term for "good practice". Stephanie will contact Morag Mackey about her presentation on good practices from the First EU Conference and to ensure harmonized actions. Kiki Petroulaki (WP3) will undertake the task of defining "good practice", which will then be sent to the WP leaders for comments by July 2006, since WP3 is dedicated to good practices.

WP4: Falls among the elderly
Eva Negri

The aims and progress of work package 4 were presented. For further information, please reference the presentation. Main points of discussion are listed below:

First meeting: July 4-5, 2006 in Milan
- Recommended to contact Ian Roberts to volunteer to update the Cochrane library.
- It was decided that pharmaceutical therapy will not be included in the prevention activities as it may very well work in some instances, however, it may also have serious side health affects.
- As there is a lot of information about the methods used to develop interventions, but little information about the actual interventions, a discussion about being innovative and making recommendations on interventions that we possibly would pilot took place.
- It was recommended to include an inventory of current interventions/ programs being developed (eg. industry is working on air bags for falling elderly) together with our opinions of them.

WP3: Barriers/success factors to implementation of good practices
Kiki Petroulaki

The aims and progress of work package 3 were presented. For further information, please reference the presentation. Main points of discussion are listed below:

- The "barriers" are the "richness" of this work package and should ensure the methodology will achieve the optimum results. It was recommended to also use outside sources such as the USA and Australia.

- It was recommended by M. Segui Gomez that WP-AI members be asked to provide related information about their implemented interventions/practices.
- Round table discussions may be a good idea to set up in order to gather ideas on what the barriers and success factors are which is in fact among the planned tasks of Module 3.

WP2: Burden of injuries
Maria Segui-Gomez

The progress of work package 2 was presented. Main points of discussion are listed below:

- Out of the 40 injury- related indicators, need to select 10 indicators and in which order they should be listed.
- Partner meeting: June 26, 2006
- Completed the advance computer programming software.
- Abstract accepted by APHA, USA but rejected by EPHA (European Public Health Association).
- To produce and print the burden of injuries atlas (book), additional funding is requested. As a possible solution, sponsorship is to be sought.
- Recommended to provide recommendations on ESTAT on coding of injuries or unspecified codes, of which Maria would be happy to include.
- Presentation of indicators at the ICE meeting in September 2006.
- Interim report: A request to change the payment arrangement as 85% of the work will be completed by end of the first year will be submitted to the EC (plan a). Leaders are requested to think of a plan b.

3. Other business

Next telephone conversation with work package leaders: Wednesday, September 13, 2006 at 15h00 CET.

Second WP leaders meeting: December 19-20, 2006 (1.5 day).

Interim report will be submitted with new names “KfV” and “EuroSAFE” (without request for amendment to contract) as the Commission has already been informed about name changes for these organizations.

Appendix II

WP2: Burden of Injuries: The complete software list:

1. European Center for Injury Prevention, University of Navarra, Algorithm to check for invalid codes for ICD-9-CM injuries and mechanisms, version 1 for STATA. Pamplona, Spain 2006.
2. European Center for Injury Prevention, University of Navarra, Algorithm to transform ICD-9-CM codes into the Barell Matrix, version 1.0 for STATA. Pamplona, Spain 2006.
3. European Center for Injury Prevention, University of Navarra, Algorithm to include indicators for Nature and External codes for ICD-9CM, version 1.0 for STATA. Pamplona, Spain 2006.
4. European Center for Injury Prevention, University of Navarra, Algorithm to include indicators for Mechanisms for ICD-9CM, version 1.0 for STATA. Pamplona, Spain 2006.
5. European Center for Injury Prevention, University of Navarra, Algorithm to show the results for all data for ICD-9CM, version 1.0 for STATA. Pamplona, Spain 2006.
6. European Center for Injury Prevention, University of Navarra, Algorithm to check for invalid codes for ICD-10 injuries and mechanisms, version 1.0 for STATA. Pamplona, Spain 2006.
7. European Center for Injury Prevention, University of Navarra, Algorithm to transform ICD-10 codes into the Barell Matrix, version 1.0 for STATA. Pamplona, Spain 2006.
8. European Center for Injury Prevention, University of Navarra, Algorithm to transform ICD-10 codes into AIS 90 (98 update), version 1.0 for STATA Pamplona, Spain 2006.
9. European Center for Injury Prevention, University of Navarra, Algorithm to include indicators for Nature and External codes for ICD-10, version 1.0 for STATA. Pamplona, Spain 2006.
10. European Center for Injury Prevention, University of Navarra. Algorithm to include indicators for Mechanisms for ICD-10, version 1.0 for STATA, Pamplona, Spain 2006.
11. European Center for Injury Prevention, University of Navarra, Algorithm to show the results for all data for ICD-10, version 1.0 for STATA. Pamplona, Spain 2006.
12. European Center for Injury Prevention, University of Navarra, Algorithm to check for invalid codes for ICD-9-CM injuries and mechanisms, version 1 for SPSS. Pamplona, Spain 2006.
13. European Center for Injury Prevention, University of Navarra, Algorithm to transform ICD-9-CM codes into the Barell Matrix, version 1.0 for SPSS. Pamplona, Spain 2006.
14. European Center for Injury Prevention, University of Navarra, Algorithm to include indicators for Nature and External codes for ICD-9CM, version 1.0 for SPSS. Pamplona, Spain 2006.
15. European Center for Injury Prevention, University of Navarra, Algorithm to include indicators for Mechanisms for ICD-9CM, version 1.0 for SPSS. Pamplona, Spain 2006.

16. European Center for Injury Prevention, University of Navarra, Algorithm to show the results for all data for ICD-9CM, version 1.0 for SPSS. Pamplona, Spain 2006.
17. European Center for Injury Prevention, University of Navarra, Algorithm to check for invalid codes for ICD-10 injuries and mechanisms, version 1.0 for SPSS. Pamplona, Spain 2006.
18. European Center for Injury Prevention, University of Navarra, Algorithm to transform ICD-10 codes into the Barell Matrix, version 1.0 for SPSS. Pamplona, Spain 2006.
19. European Center for Injury Prevention, University of Navarra, Algorithm to transform ICD-10 codes into AIS 90 (98 update), version 1.0 for SPSS Pamplona, Spain 2006.
20. European Center for Injury Prevention, University of Navarra, Algorithm to include indicators for Nature and External codes for ICD-10, version 1.0 for SPSS. Pamplona, Spain 2006.
21. European Center for Injury Prevention, University of Navarra, Algorithm to include indicators for Mechanisms for ICD-10, version 1.0 for SPSS, Pamplona, Spain 2006.
22. European Center for Injury Prevention, University of Navarra, Algorithm to show the results for all data for ICD-10, version 1.0 for SPSS. Pamplona, Spain 2006.

WP2: Socio-economic cost of injuries: rationale of work

Sub-project led by David McDaid, LSE, UK

Impact

Injuries including self-inflicted harm are a major cause of premature mortality and avoidable morbidity in Europe. The WHO's Global Burden of Disease project provides such data for all health problems worldwide and on a regional basis. Data from the World Health Report 2004 report in the WHO European region that injuries, both intentional and unintentional account for 13.93% of all burden of disease. Using this analysis the importance of effective injury prevention becomes even clearer as the this total burden is greater than that for all cancers (11.42%) and only superseded by neuropsychiatric disorders (20%) and cardiovascular disease (23%).

In addition to being a major cause of premature death, they are also a major cause of serious long term physical disability, and can also lead to long term behavioural and emotional impairment. These costs and consequences are do not just impact on individuals alone but also on their families and indeed more generally to society through the impact injuries can have on individuals ability to remain economically productive.

Review 1: Assessing the economic impact of injuries

It is important therefore to have an understanding of the socio-economic impact of injuries in order to feed into the policy making process in Europe concerning how best to prioritise measures not only to improve quality of life but also economic performance across Europe, as indicated within the EU's ongoing Lisbon process.

Cost of illness studies (see section X) seek to measure this economic impact and form the first element of our literature review. Which seeks to identify published estimates of all different elements that make up the costs of injuries. Most obviously these include direct costs arising from demands placed on the emergency services, potential life saving interventions to be delivered within the health care system, investigations to be carried out by the police and coroner, and of course costs associated with funerals. For those individuals who survive intentional and unintentional injuries, lengthy physical and psychological rehabilitation may follow.
Then there are what economists call indirect costs. As a result of premature death and absence due to injury related illness individuals lose the opportunity to contribute productively to the national economy, whether this be through paid work, voluntary activities, or family responsibilities such as looking after one's children or parents. In the case of children, this might also be the lost educational opportunities experienced and their impact on potential future contribution to society. Acquired disability as a result of injury might also reduce the future productivity of individuals.
The final type of cost of injuries are often known as 'intangible costs' because they are often hidden and difficult to quantify and/or value. In the case of the loss of life, these costs would include the loss of the opportunity to experience all that life holds. The pain and grief that premature death can have on immediate family members and friends can be immense and long lasting. Another intangible cost may be the impact of any physical or mental disfigurement incurred, and the ensuing stigma and potential discrimination that may be endured.

Review 2: The need for information on cost effectiveness

While having an understanding of what the costs of injuries entail and their impact on health and other systems this is of little use, unless there are effective interventions available which can either prevent injuries occurring or alternatively can reduce their severity. Even if there are effective interventions available, resource scarcity is endemic. Thus policy makers will need to choose between different alternative uses of resources. Methods of economic evaluation which look not only at evidence on effectiveness of interventions but also at the resources they require to implement and any potential impact they have on health system (or other sector) service utilisation. If resources allocated to preventing injuries seem low compared to their overall contribution to the burden of disease AND if there are cost effective interventions available this will mean that resources are not being allocated efficiently. A different way of prioritising the use of resources might therefore increase the overall levels of benefits to society.

A second aspect of our literature review is thus to assess what is known about the cost effectiveness of injury prevention interventions and strategies. (A brief description of the different types of evaluation method included in the review are set out in the next section of review methodology.)

Systematic Review Protocol

Search protocol

Our literature review protocol is being developed in accordance with guidelines set out by the NHS Centre for Reviews and Dissemination.(Centre for Reviews and Dissemination, 2001) Given the many studies which are cost of illness studies are

often incorrectly classified as full economic evaluations it seemed prudent to undertake both literature reviews –on cost of illness studies and economic evaluations – concurrently.

Inclusion criteria

Causes of injuries

It is perhaps helpful to begin by briefly setting out what we mean by injuries that have been included in this review. They can be intentional, (through suicide or self-harm) or accidental perhaps due to road traffic accidents, falls, participation in sports, or household/work related events. They may also result from violence incidents such as assaults. We have sought to include all those injuries as defined by the WHO International Classification of Disease V 10 ICD-10 codes covering external causes of morbidity and mortality. Specifically these include all codes from V01 to X59 (Accidents); X60 – X84 Intentional Self-Harm, X85- Y09 (Violence and Assault – including domestic abuse. Injuries due to conflict and war have been excluded from the analysis. Similarly while we have documented studies looking at adverse events and complications arising from surgery, these also have not been included in our final analysis. Occupational injuries to healthcare staff such as needlestick injuries for instance, have however been included in our analysis.

Areas of special interest

In undertaking the analysis we have drawn special attention to two key areas – road traffic accidents and the falls experienced by older people. For bibliographic databases without structured keyword searching we have gone to great lengths to include additional search terms to maximise in particular studies looking at these two areas.

Languages

No languages restrictions were specified – although principle language skills in the reviewing team were essentially restricted to English, Spanish, French, Italian and Serbo-Croat.

Time Frame

In terms of the time frame, no specific cut off has been set. While we recognise that this increases the amount of material to process, our view has been that this does not make the task unmanageable because of the limited production of economic information in this area. This being said it is of course a bias that many of the electronic sources of information used go no further back that the mid 1960s. The searches are automatically re run monthly so as to identify any additional materials during the lifetime of the project

Geographical coverage

Our primary focus is on information from the EU, Candidate Countries and Associate Countries, plus Switzerland. We hypothesised however that for some causes of injury, available information worldwide may be very limited thus we did not impose any

geographical restrictions on our search, although it should be noted that we did not seek to search and low and middle country only sources of information.

Methods of economic evaluation included

In addition to 'cost of illness' studies which merely report the costs associated with an injury we also searched for economic evaluations of interventions to prevent injuries. There are a number of different approaches to economic evaluation that have been used in such assessments and are included in our review. Full details cannot be provided here, but there are some excellent accounts of health economic evaluation methods e.g. (although with comparatively very few promotion/prevention examples)(Drummond et al., 1997; McGuire & Drummond, 2001). Perhaps the most welcome development is the production of a manual specifically designed to help incorporate economic evaluation into the assessment of complex interventions in the area of health promotion.(Hale et al., 2005)

There are five conventional types of economic evaluation included in our review, each of which has a different scope and suitability. The type of method used depends on the question addressed, but all have the underlying aim of examining the efficiency with which resources are being utilised. If the evaluation is comparing two injury prevention interventions, the question to be addressed is thus whether one intervention achieves better outcomes for individuals than the other, relative to their respective costs. These interventions might also be compared with different health (and non health) system interventions including diverse measures such as legislation and national policies. The various modes of economic evaluation frame these efficiency comparisons in slightly different contexts.

In addition to conventional economic evaluations, fiscal and regulatory measures which typically are not the subject of the same evaluation procedures, nonetheless may be a key tool in encouraging more injury conscious behaviour. For instance there may be subsidies for individuals to purchase safer products, or there may be fines imposed on unsafe behaviours. While such evaluations typically do not assess the 'cost' of introducing such instruments and tend only to report changes in consumption patterns rather than impacts in terms of injuries avoided, it seems prudent to include relevant studies where identified.

Sources of information

In determining which databases to include in our search, we have in part been informed by a Health Development Agency (in England) /NICE publication on the flexibility and quality of databases that are broadly relevant to health related concerns (Powell et al., 2004). While not focused specifically on injury prevention this document provides an excellent guide to which databases make use of a suitable controlled vocabulary and general flexibility for searching. We are also mindful of the general guidance on reviewing in the social science which recommends that a broad range of bibliographic databases be searched (Petticrew & Roberts, 2005). Given that relevant databases will often lie outside the domain of health we have referred to previous search strategies to identify additional databases searched.
This literature search presents a number of challenges. Interventions to prevent injuries can be delivered in many different fields e.g. transport, public health, environmental protection, education, and social care to name but a few. Our search

strategy is influenced in part by the feasibility of conducting complex searches using appropriate databases.

Databases searched include most of the key medical bibliographic databases. These include the US National Library of Medicine's PubMed (Medline) database. This database includes a specific controlled vocabulary MeSH (Medical Subject Headings) for economic evaluation and public health interventions allowing a more precise search strategy to be developed.(Boynton et al., 1998)

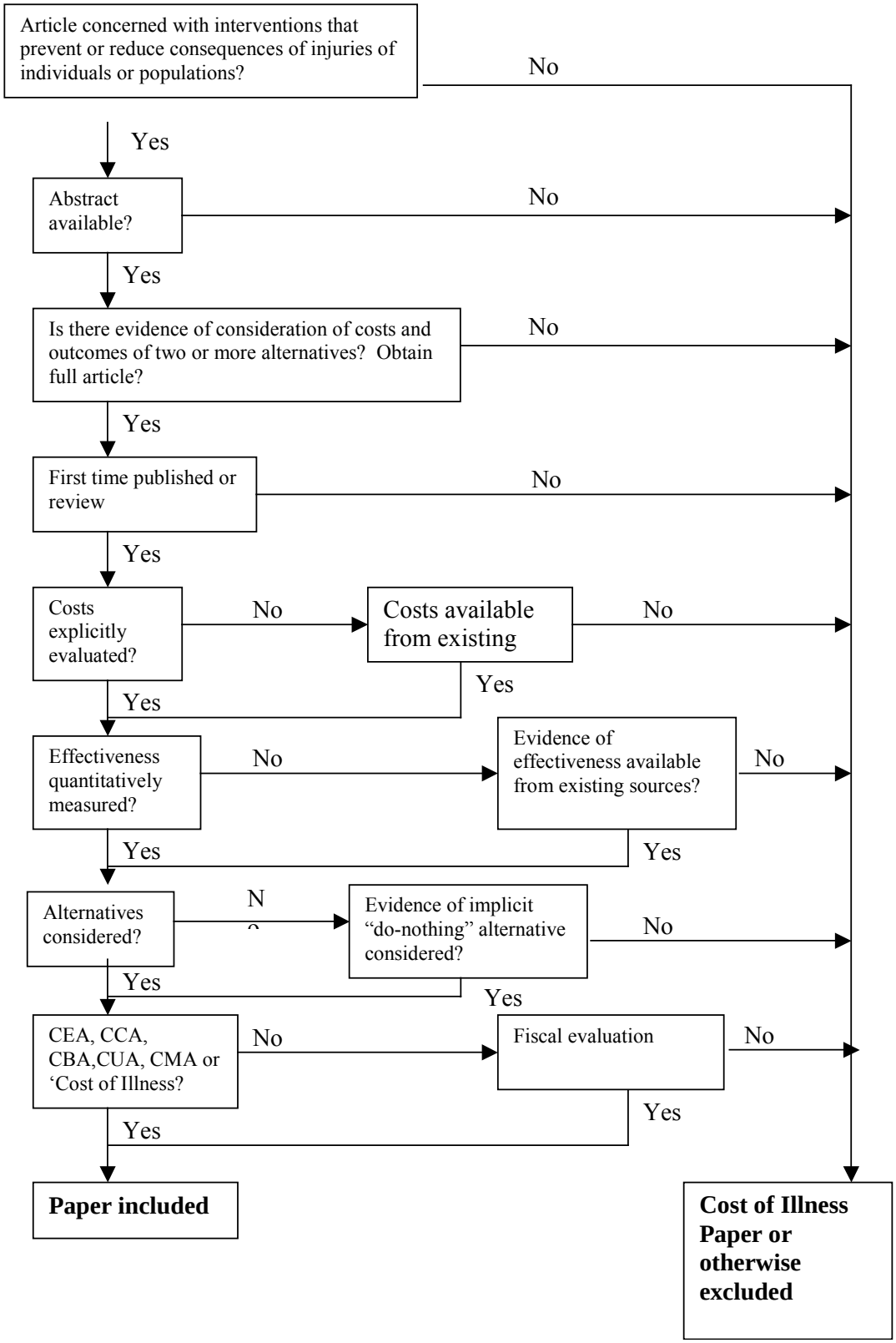
Other health related databases searched included CINAHL (The Cumulative Index to Nursing & Allied Health database covers nearly all English-language publications, including those of the American Nurses Association and the National League for Nursing). Given the focus on older people, AGELINE which contains bibliographical details of literature on ageing and it is compiled by the American Association of Retired Persons (note US spellings) was also used. Psychinfo (Formerly Psychlit) a database which includes many psychiatric and psychology journals not picked up within. We chose not to search the EMBASE database on time grounds as previous work has shown that very few additional cost related papers are found compared with a search of Medline; in fact papers would be lost if Embase were to substitute for Medline.(Sassi et al., 2002) Given our focus on costs we are also searching the Econlit database which indexes 800 economics journals. Clearly it is advantageous if databases provide access to abstracts and use a standardised controlled vocabulary of key terms. With the exception of Econlit, whose interface is rather limited, all of the above databases do use such controlled vocabularies. Caution must be exercised however as the quality of indexing of studies, using controlled vocabulary terms is also important; even in databases such as Medline where specific terms exist to categorise economic evaluations for example, a high degree of papers are incorrectly classified, most likely because of the limited expertise of the librarians cataloguing papers in identifying what constitutes an economic evaluation.(Sassi et al., 2002)
In going beyond databases with controlled vocabulary searching facilities, we had to trade off the potential for finding additional studies against the potential functional limitations of some databases. This might mean that we would spend much time retrieving a high number of irrelevant records, or have insufficient information to make any judgement on a paper.

Additional databases chosen included the International Bibliography of the Social Sciences (IBSS), the Public Administration and Information Service (PAIS), and ERIC, which contains citations covering research documents, journal articles, technical reports, programme descriptions and evaluations, and curricular materials in the field of education since 1966. For transport safety measures specific databases including the Transport Research Information Service. (Zaza et al., 2001)

Few literature searches use non-English language search terms. This potentially introduces a potential source of bias. To try and deal (albeit minimally) we this issue we will also search selected French and Spanish databases. The CISMeF (Catalogue and Index of Health Resources in French) database was accessed and uses a MeSH like search interface.(Douyere et al., 2004) Spanish resources accessed essentially focus on ISOC a database of social science and humanities journals, and IME a biomedical sciences database, both freely available via the Spanish Ministry of Education and Science.

WP2: Socio-economic cost of injuries: flow chart of review inclusion criteria

Figure 2. Flow chart of review inclusion criteria for agreeing on economic evaluations



WP2: Socio-economic cost of injuries: references
Subproject led by David McDaid, LSE, UK

Arias, I. & Corso, P. (2005). Average cost per person victimized by an intimate partner of the opposite gender: a comparison of men and women. *Violence Vict*, *20* (4): 379-91.

Boynton, J., Glanville, J., McDaid, D. & Lefebvre, C. (1998). Identifying systematic reviews in MEDLINE: testing an objective approach to search strategy design. *Journal of Information Science*, *24* (3): 1-52.

Byford, S., Harrington, R., Torgerson, D., Kerfoot, M., Dyer, E., Harrington, V., Woodham, A., Gill, J. & McNiven, F. (1999). Cost-effectiveness analysis of a home-based social work intervention for children and adolescents who have deliberately poisoned themselves. Results of a randomised controlled trial. *Br J Psychiatry*, *174*: 56-62.

Byford, S., Knapp, M., Greenshields, J., Ukoumunne, O. C., Jones, V., Thompson, S., Tyrer, P., Schmidt, U. & Davidson, K. (2003). Cost-effectiveness of brief cognitive behaviour therapy versus treatment as usual in recurrent deliberate self-harm: a decision-making approach. *Psychol Med*, *33* (6): 977-86.

Centers for Disease Control (2003). Why Strength Training? Atlanta, CDC.

Centre for Reviews and Dissemination (2001). *Undertaking systematic reviews of research on effectiveness. CRD Report No 4.* York: NHS Centre for Reviews and Dissemination.

Chatterji, P., Caffray, C. M., Crowe, M., Freeman, C. & Jenson, P. (2004). Cost assessment of a school based mental health screening and treatment programme in New York City. *Mental Health Services Research*, *6* (3): 155-66.

Clayton, D. & Barceló, A. (2000). The cost of suicide mortality in New Brunswick, 1996. *Chronic Diseases in Canada*, *20* (2): 89-95.

Colon-Emeric, C. S., Datta, S. K. & Matchar, D. B. (2003). An economic analysis of external hip protector use in ambulatory nursing facility residents. *Age Ageing*, *32* (1): 47-52.

Cryer, C. (2001). What works to prevent accidental injury amongst older people. Canterbury, Centre for Health Service Studies, University of Kent.

de Castro, S., Newman, F., Mills, G. & Sari, N. (2004). Economic evaluation of suicide prevention programs for young adults in Florida. *Business Review Cambridge*, *December*: 14-20.

Department of Transport (2004). Highways Economic Note No 1. London, Department of Transport.

Domino, M. E., Morrissey, J. P., Chung, S., Huntington, N., Larson, M. J. & Russell, L. A. (2005). Service use and costs for women with co-occurring mental and substance use disorders and a history of violence. *Psychiatr Serv*, *56* (10): 1223-32.

Douyere, M., Soulamia, L., Neveol, A. & al, e. (2004). Enhancing the MESH thesaurus to retrieve French online health resources in a quality controlled gateway. *Health Information and Libraries Journal*, *21*: 253-61.

Drummond, M., O'Brien, B., Stoddart, G. & Torrance, G. (1997). *Methods for the Economic Evaluation of Health Care Programmes*. Oxford.: Oxford Medical Publications.

Fleurence, R. L. (2004). Cost-effectiveness of fracture prevention treatments in the elderly. *Int J Technol Assess Health Care*, *20* (2): 184-91.

Gough, D. & Elbourne, D. (2002). Systematic Research Synthesis to Inform Policy, Practice and Democratic Debate. *Social Policy and Society*, *1* (3): 225-36.

Guria, J. (1999). An economic evaluation of incremental resources to road safety programmes in New Zealand. *Accid Anal Prev*, *31* (1-2): 91-9.

Hale, J., Cohen, D., Ludbrook, A., Phillips, C., Duffy, M. & Parry-Langdon, N. (2005). Moving from evaluation into economic evaluation: a health economics manual for programmes to improve health and well-being. Cardiff, National Assembly for Wales.

Honkanen, L. A., Schackman, B. R., Mushlin, A. I. & Lachs, M. S. (2005). A cost-benefit analysis of external hip protectors in the nursing home setting. *J Am Geriatr Soc*, *53* (2): 190-7.

Johnson, M. R. D. (2000). Perceptions of barriers to healthy physical activity among Asian communities. *Sport, Education and Society*, *5* (1): 51-70.

Kedikoglou, S., Belechri, M., Dedoukou, X., Spyridopoulos, T., Alexe, D. M., Pappa, E., Stamou, A. & Petridou, E. (2005). A maternity hospital-based infant car-restraint loan scheme: public health and economic evaluation of an intervention for the reduction of road traffic injuries. *Scand J Public Health*, *33* (1): 42-9.

Kenkre, J. E., Allan, T. F., Tobias, R. S., Parry, D. J., Bryan, S. & Carter, Y. H. (2002). Breaking bones, breaking budgets: A clinical and economic evaluation of a prospective, randomized, practice controlled, intervention study in the prevention of accidents in primary care. *Family Practice*, *19* (6): 675-81.

Kennelly, B., Ennis, J. & O'Shea, E. (2005). Economic cost of suicide and deliberate self harm. *Reach out. National strategy for action on suicide prevention 2005 - 2014*Eds. Dublin: Department of Health and Children.

Lindqvist, K. & Lindholm, L. (2001). A cost-benefit analysis of the community-based injury prevention programme in Motala, Sweden--a WHO Safe Community. *Public Health*, *115* (5): 317-22.

Mallender, J., O'Leary, C. & Lowdell, C. (2002). Costs of injuries to London. *Too high a price. Injuries and accidents in London*. C. Lowdell, J. Fitzpatrick, R. Wallis, J. Mindell and B. Jacobson, Eds. London: London Health Observatory.

Maraste, P., Persson, U. & Berntman, M. (2003). Long-term follow-up and consequences for severe road traffic injuries-treatment costs and health impairment in Sweden in the 1960s and the 1990s. *Health Policy*, *66* (2): 147-58.

McCarthy, C. J., Mills, P. M., Pullen, R., Richardson, G., Hawkins, N., Roberts, C. R., Silman, A. J. & Oldham, J. A. (2004). Supplementation of a home based exercise programme with a class-based programme for people with osteoarthritis of the knees: a randomised controlled trial and health economic analysis. *Health Technology Assessment*, *8* (46).

McGuire, A. & Drummond, M. (2001). *Economic evaluation in health care: merging theory with practice*. Oxford: Oxford University Press.

Medoff, M. H. (1986). An evaluation of the effectiveness of suicide prevention centers. *Journal of Behavioral Economics*, *15*: 43-55.

Metzger, J., McGwin, G., Jr., MacLennan, P. A. & Rue, L. W., 3rd (2004). Is seat belt use associated with fewer days of lost work after motor vehicle collisions? *J Trauma*, *56* (5): 1009-14.

Meyer, G., Wegscheider, K., Kersten, J. F., Icks, A. & Muhlhauser, I. (2005). Increased use of hip protectors in nursing homes: economic analysis of a cluster randomized, controlled trial. *J Am Geriatr Soc*, *53* (12): 2153-8.

Miller, T., Blewden, M. & Zhang, J. F. (2004). Cost savings from a sustained compulsory breath testing and media campaign in New Zealand. *Accid Anal Prev*, *36* (5): 783-94.

Miller, T. R. & Levy, D. T. (2000). Cost-outcome analysis in injury prevention and control: eighty-four recent estimates for the United States. *Med Care*, *38* (6): 562-82.

Mulder, S., Meerding, W. & van Beeck, E. (2002). Setting priorities in injury prevention: the application of an incidence-based cost model. *Injury Prevention*.

Munro, J. & al., e. (1997). Physical activity for the over- 65s: could it be a cost-effective exercise for the NHS? *Journal of Public Health Medicine;*, *19* (4): 397- 402.

Nicholl, J., Coleman, P. & Brazier, J. (1994). Health and healthcare costs and benefits of exercise. *Pharmacoeconomics*, *5* (2): 109-22.

O'Dea, D. & Tucker, S. (2005). The Cost of Suicide to Society. Wellington, New Zealand Ministry of Health.

Peden, M. (2005). Global collaboration on road traffic injury prevention. *Int J Inj Contr Saf Promot*, *12* (2): 85-91.

Petticrew, M. & Roberts, H. (2005). *Systematic reviews in the social sciences. A practical guide*. Oxford: Blackwell Publishing.

Platt, S., Halliday, E., Maxwell, M., McCollam, A., McLean, J., Woodhouse, A., Blamey, A., Mackenzie, M. & McDaid, D. (2006). Evaluation of the first phase of Choose Life. Final Report. Edinburgh, Scottish Executive.

Polinder, S., Meerding, W., Toet, H., van Baar, M., Mulder, S., van Beeck, E. & group, E. r. (2004). A surveillance based assessment of medical costs of injury in Europe: Phase 2. Amsterdam, Consumer and Safety Institute.

Powell, J., Glanville, J. & Mather, L. (2004). Indexing of databases relevant to public health. London, National Institute for Health and Clinical Excellence.

Province, M. & al., e. (1995). The effects of exercise on falls in the elderly: a pre-planned meta-analysis of the FISCIT trails. *JAMA*,, *273* (1341-47.).

Robertson, L. S. (1977). Car crashes: perceived vulnerability and willingness to pay for crash protection. *J Community Health*, *3* (2): 136-41.

Robertson, M., Devlin, N., Scuffham, P., Gardner, M. M., Buchner, D. M. & Campbell, A. (2001). Economic evaluation of a community based exercise programme to prevent falls. *Journal of Epidemiology and Community Health*, *55* (8): 600-06.

Rush, B., Shiell, A. & Hawe, P. (2004). A census of economic evaluations in health promotion. *Health Education Research*, *19* (6): 707-19.

Rutz, W., Carlsson, P., von Knorring, L. & Walinder, J. (1992). Cost-benefit analysis of an educational program for general practitioners by the Swedish Committee for the Prevention and Treatment of Depression. *Acta Psychiatr Scand*, *85* (6): 457-64.

Sassi, F., Archard, L. & McDaid, D. (2002). Searching literature databases for health care economic evaluations: how systematic can we afford to be? *Medical Care*, *40* (5): 387-94.

Scuffham, P., Chaplin, S. & Legood, R. (2003). Incidence and costs of unintentional falls in older people in the United Kingdom. *Journal of Epidemiology and Community Health*, *57* (9): 740-44.

Scully, D., Kremer, J., Meade, M., Graham, R. & Dudgeon, K. (1998). Physical exercise and psychological well being: a critical review. *British Journal of Sports Medicine*, *32* (2): 111-20.

Segui-Gomez, M., Keuffel, E. & Frick, K. D. (2002). Cost and effectiveness of hip protectors among the elderly. *Int J Technol Assess Health Care*, *18* (1): 55-66.

Singh, S., Sun, H. & Anis, A. H. (2004). Cost-effectiveness of hip protectors in the prevention of osteoporosis related hip fractures in elderly nursing home residents. *J Rheumatol*, *31* (8): 1607-13.

Sullivan, P. W., Follin, S. L. & Nichol, M. B. (2004). Cost-benefit analysis of first-generation antihistamines in the treatment of allergic rhinitis. *Pharmacoeconomics*, *22* (14): 929-42.

Tay, R. (2005). Drink driving enforcement and publicity campaigns: are the policy recommendations sensitive to model specification? *Accid Anal Prev*, *37* (2): 259-66.

Taylor, M. & Scuffham, P. (2002). New Zealand bicycle helmet law--do the costs outweigh the benefits? *Inj Prev*, *8* (4): 317-20.

Telser, H. & Zweifel, P. (2002). Measuring willingness-to-pay for risk reduction: an application of conjoint analysis. *Health Econ*, *11* (2): 129-39.

Thomas, C. & Morris, S. (2003). Cost of depression among adults in England in 2000. *British Journal of Psychiatry*, *183*: 514-19.

Thompson, K. M., Segui-Gomez, M. & Graham, J. D. (2002). Validating benefit and cost estimates: the case of airbag regulation. *Risk Anal*, *22* (4): 803-11.

US Preventive Services Task Force (2004). Screening for suicide risk, Agency for Healthcare Research and Quality.

van Schoor, N. M., de Bruyne, M. C., van der Roer, N., Lommerse, E., van Tulder, M. W., Bouter, L. M. & Lips, P. (2004). Cost-effectiveness of hip protectors in frail institutionalized elderly. *Osteoporos Int*, *15* (12): 964-9.

Waldegger, L., Cranney, A., Man-Son-Hing, M. & Coyle, D. (2003). Cost-effectiveness of hip protectors in institutional dwelling elderly. *Osteoporos Int*, *14* (3): 243-50.

Winterthurer Institut fur Gesundheitssokonomie (2004). Ökonomische Beurteilung von Gesundheitsförderung und Prävention. Winterthurer, Winterthurer Institut.

World Health Organisation (2002). Community participation in local health and sustainable development - Approaches and Techniques European Sustainable Development and Health Series 4. Copenhagen, World Health Organisation Regional Office for Europe.

Zaloshnja, E., Miller, T. R., Galbraith, M. S., Lawrence, B. A., DeBruyn, L. M., Bill, N., Hicks, K. R., Keiffer, M. & Perkins, R. (2003). Reducing injuries among

Native Americans: five cost-outcome analyses. *Accident Analysis and Prevention*, *35* (5): 631-9.

Zaza, S., Carande-Kulis, V. G., Sleet, D. A., Sosin, D. M., Elder, R. W., Shults, R. A., Dinh-Zarr, T. B., Nichols, J. L. & Thompson, R. S. (2001). Methods for conducting systematic reviews of the evidence of effectiveness and economic efficiency of interventions to reduce injuries to motor vehicle occupants. *Am J Prev Med*, *21* (4 Suppl): 23-30.

Appendix III

WP3: ECaI: Search Protocol

Subject: Location and gathering of Interventions and Policies (as well as the respective organizations [resources]) addressing Road Traffic, Alcohol Related, and Occupational Injuries prevention for people aged 15-64 years old

Search strategy

Table 1: Proposed Keywords per priority addressing and per document type

Priority:	Road Traffic Injuries	Alcohol-Related Injuries	Occupational Injuries
Interventions	"injury"; "accident"; "fatal"; "non-fatal"; "road traffic"; "motor vehicle"; "car"; "automobile"; "transportation"; "pedestrian"; "road vulnerable users"; "cyclists"; "two-wheelers" AND "Prevention"; "intervention"; "practice"; "strategy"	"injury"; "accident"; "fatal"; "non-fatal"; "alcohol"; "alcohol-related"; "alcohol-use"; "alcohol-abuse"; "drink" AND "Prevention"; "intervention"; "practice"; "strategy"	"injury"; "accident"; "fatal"; "non-fatal"; "occupational"; "work-related"; "job-related"; "industrial"; "professional"; AND "Prevention"; "intervention"; "practice"; "strategy"
Policies	"injury"; "accident"; "fatal"; "non-fatal"; "road traffic"; "motor vehicle"; "car"; "automobile"; "transportation"; "pedestrian"; "road vulnerable users"; "cyclists"; "two-wheelers" AND "Prevention"; "policy"; "recommendation"; "standard"; "legislation"; "guideline"; "rule"; "strategy"; "plan"; "procedure"	"injury"; "accident"; "fatal"; "non-fatal"; "alcohol"; "alcohol-related"; "alcohol-use"; "alcohol-abuse"; "drink" AND "Prevention"; "policy"; "recommendation"; "standard"; "legislation"; "guideline"; "rule"; "strategy"; "plan"; "procedure"	"injury"; "accident"; "fatal"; "non-fatal"; "occupational"; "work-related"; "job-related"; "industrial"; "professional"; AND "Prevention"; "policy"; "recommendation"; "standard"; "legislation"; "guideline"; "rule"; "strategy"; "plan"; "procedure"

Sources will be searched

Electronic search (Internet) - Electronic Databases

ID	Data base	Online accessibility
a.	AMED: Allied and Complementary Medicine (The British Library) http://www.bl.uk/search.html	Free download
b.	CINAHL Nursing & Allied Health http://www.cinahl.com/	CINAHLdirect® online service Annual Membership $20.00
c.	Cochrane Library –Interscience (Wiley Version) http://www.mrw.interscience.wiley.com/cochrane/cochrane_clabout_contents_fs.html	24-Hour Online Access to article US$ 25.00 * *Sales tax will be applied in Canada
d.	CRD: Center of Review and Dissemination Databases http://www.york.ac.uk/inst/crd/crddatabases.htm i. DARE: Database of Assessment of Reviews of Effectiveness http://www.york.ac.uk/inst/crd/darehp.htm ii. NHS EED: NHS Economic Evaluation Database http://www.york.ac.uk/inst/crd/nhsdhp.htm iii. HTA: Health Technology Assessment database http://www.york.ac.uk/inst/crd/htahp.htm	Free
e.	EBM Journal: Evidence Based Medicine Reviews http://www.ebm-journal.presse.fr/search?SearchableText=prevention+occupational+injuries	Subscription

f.	EconLit: American Economic Association's electronic bibliography of economic literature http://www.econlit.org/index.html (The most recent 10 years of EconLit on a CD-ROM including SilverPlatter®'s SPIRS®, WINSPIRS®, or MACSPIRS® search and retrieval software 85$)	Subscription
g.	EMBASE: The Excerpta Medica database for biomedical and pharmacological information http://www.embase.com/search	Registration
h.	ERIC: Education Resources Information Center http://www.eric.ed.gov/ also http://searcheric.org/	Free (where available full text)
i.	Eurobarometer http://www.esds.ac.uk/International/access/eurobarometer.asp	Free
j.	Harrison's Principles of Internal Medicine http://www.accessmedicine.com/home.aspx 30day free- https://store.accessmedicine.com/login.aspx?user=0&type=1	Subscription
k.	Health Information Research Unit http://hiru.mcmaster.ca/	Free
l.	HealthWeb - Evidence Based Health Care http://healthweb.org/index.cfm	Free
m.	HEED: Health Economic Evaluations Database http://www.ohe-heed.com/about.htm (For demo access: user name: demo, password: visitor) http://clarinet-nt.clarinet.co.uk/OHE/CnIsapi.dll?nuni=28108&usr=0&alias=OHE&uni=1&fld=X&Jump=password	Annual Subscription
n.	Infotrieve: FreeMedline search year wise with full-text document delivery http://www3.infotrieve.com/medline/infotrieve	Free abstracts
o.	National Guidelines Clearinghouse http://www.guidelines.gov/about/about.aspx	Free
p.	LILACS: Latin American and Caribbean Health Sciences Literature http://bases.bireme.br/cgi-bin/wxislind.exe/iah/online/?IsisScript=iah/iah.xis&base=LILACS&lang=i	Free abstracts
q.	MEDLINE http://medline.cos.com/	Subscription (Individual: US $175/year)
r.	Primary Care- Clinical Practice Guidelines http://medicine.ucsf.edu/resources/guidelines/guide.html	Free
s.	PsycINFO (APA): comprehensive international bibliographic database of psychology http://www.apa.org/psycinfo/about/questions.html	Subscription
t.	PsycLit: Literature Reference for Psychology	Subscription
u.	PubMed: U.S. National Library of Medicine http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?DB=pubmed	Free abstracts
v.	SafetyLit: Injury Research and Prevention Literature http://www.safetylit.org/	Subscription
w.	Science Citation Index: Journal List Options http://www.hshsl.umaryland.edu/resources/databases/sci.html	Free
x.	SSCI: Social Science Citation Index and Social SkiSearch: access to current & retrospective bibliographic information http://scientific.thomson.com/products/ssci/	Subscription
y.	SPECTR: Social, Psychological, Educational and Criminological Trials Registered http://www.campbellcollaboration.org/ http://geb9101.gse.upenn.edu:81/rmwp	Free abstracts
z.	TRANSPORT database http://w3.unece.org/stat/transport.asp	Free?
aa.	US National Guideline Clearinghouse http://www.guideline.gov/	Free
bb.	WebSPIRS: SilverPlatter's Information Retrieval System for the World Wide Web http://web5.silverplatter.com/webspirs/start.ws	Subscription
cc.	WHOLIS: WHO database & e-resources on the Internet http://www.loc.gov/rr/ElectronicResources/full_description.php?MainID=897	
dd.	… (to be modified or completed where needed)	
ee.	Other Electronic sources (related to the topic sites, from related organizations, networks, etc.)	

B. Manual Search (Libraries) - Range of sources

a.	Hand searching of references of published articles (mainly for identifying grey literature) of relevant journals and Correspondence with identified authors (experts) aiming to search for additional relevant studies, new or ongoing studies of relevance and to enquire about relevant grey literature
b.	[Key people and professional organizations may also be contacted to identify missed papers, unpublished or in-progress research]
c.	Using existing reviews of the literature (where possible)
d.	Identification of direct relevance references from the reference lists of known papers and books
e.	Associated literature and references attached to a single reference
f.	Search using author names
g.	Search in particular journals publishing large numbers of articles in the area

Inclusion and Exclusion criteria (Included into Extraction Forms database)

Inclusion and Exclusion criteria for INTERVENTIONS		Inclusion and Exclusion criteria for POLICIES	
1	Published between 2001-2006 (previous years excluded)	1	Published between 1996-2006 (previous years excluded)
2	Age groups included 15-24 25-44 45-64 (0-14 and 65+ excluded)	2	Age groups included 15-24 25-44 45-64 (0-14 and 65+ excluded)
3	Priorities Included Road Traffic Injuries Alcohol Related Injuries Occupational Injuries Any combination Excluded Drowning Fire/flames/burns Falls Poisoning Misadventures med.care Other	3	Priorities Included Road Traffic Injuries Alcohol Related Injuries Occupational Injuries Any combination Excluded Drowning Fire/flames/burns Falls Poisoning Misadventures med.care Other
4	Language (abstract) Danish English Finnish French German Greek Italian Norwegian Polish Swedish (other languages are excluded)	4	Language (abstract) Danish English Finnish French German Greek Italian Norwegian Polish Swedish (other languages are excluded)
5	Evaluation Outcome Evaluation Available Process Evaluation Available Formative evaluation Cost minimization analysis Cost effectiveness analysis Cost benefit analysis Cost utility analysis Economic evaluation Outcome Evaluation will be conducted Process Evaluation will be conducted If there is no any type of evaluation (or future evaluation) the document is excluded	5	Source o European agency o Governmental agency o Local authority If the Source is unknown or none of the above, the document is excluded

Evaluation Criteria for documents that included
(Included into Extraction Forms database)

Evaluation Criteria for INTERVENTIONS		Evaluation Criteria for POLICIES	
1	Description of Intervention Intervention Name Project Title Responsible Organization Country /Area of Implementation EU wide EU Region (please, define) EU Country County/region Community Organization Other Setting of Implementation Home School Work Leisure Road Health and Social care Community Public place Other	1	Current Status Active: From (date) Inactive Currently inactive but it was active (dates) Currently inactive but it will be active on (date) Is there an agent that is monitoring/inspecting the enforcement of the policy? No Yes (Name)
2	Contact Person Details Name E-Mail Phone number Postal Address Website	2	Character of Policy Mandatory Optional Incentive-based Other
3	Type of Intervention Engineering Environmental modification Product modification Other Education /Training Promotion/awareness raising Capacity building Other Enactment /Enforcement legislation/regulation Material monitoring/inspection Low enforcement monitoring Other Economic Other Content of practice Campaign – Media Raising awareness material Training Educational/Training material Site visits Safety devices Construction/physical material Monitoring Checklists Other Short description of the Intervention	3	Target Group(s) General population Groups at risk Professionals Other

4	Description of the Sample(s) Target groups General Population Professionals Other Age-group targeted Gender targeted Male Female Both Ethnic Origin targeted Socioeconomic status targeted	4	Type of Policy General Principles Recommendation Legislation Standards Code of practice Health Plan (national/ local) Other type
5	Description of Procedures, Participation Rates, Duration and Objectives Recruitment /Selection Procedures Participation Rates Duration of the Intervention Objectives of the Intervention	5	Setting(s) covered Home Work School Leisure Road Health and Social care Community Public place Other
6	Characteristics of the Facilitator(s) Number of facilitators Facilitator(s)' specialty(ies) Facilitator(s)' gender	6	Short Description of Policy
7	Description of Evaluation Type of measurement Quantitative Qualitative Other Study design RCT (Randomized Control Trial) Case-Control (between subject design) Case-Crossover (within subject design) Cross Sectional (correlational study) Cohort Study Descriptive (observational study) Case study Other	7	Level of Implementation International EU wide EU region Country County/region Community Organization Other
8	Results of Evaluation Process Evaluation (by Author, if exists, and Reviewer) 1-Effective 2-Fairly Effective 3-Partially Effective (in some of groups) 4-Fairly Ineffective 5-Ineffective 6-Harmful 7-Unclear Outcome effectiveness (by Author, if exists, and Reviewer) 1-Effective 2-Fairly Effective 3-Partially Effective (in some of groups) 4-Fairly Ineffective 5-Ineffective 6-Harmful 7-Unclear Cost effectiveness	8	Aims of Policy Description of Primary aim of Policy Secondary aim(s) of Policy Engineering Environmental modification Product modification Other Education /Training Promotion/awareness raising Capacity building Other Enactment /Enforcement legislation/regulation Material monitoring/inspection Low enforcement monitoring Other Other

	(Author, if exists, and Reviewer) Findings description		
9	Comments	9	Notes

Rating Criteria (Will be included into Extraction Forms database)

RATING CRITERIA FOR SELECTED INTERVENTIONS		RATING CRITERIA FOR SELECTED POLICIES	
1	Theory:The degree to which the practice's actions are based on clear and well-articulated theory and clearly stated hypotheses	1	The correct problem is identified
2	Fidelity of intervention: The degree to which there is clear evidence regarding participation rates throughout the intervention	2	The problem is properly defined
3	Retention: Evidence regarding participants' retention rates (follow up after completion of the intervention)	3	All important aspects are taken into account
4	Sampling strategy: The quality of sampling design	4	Policy's Objectives /Goals are clearly defined
5	Measures: The quality of measures used in the evaluation and the quality of supporting evidence	5	Policy's Content /Procedures are clearly defined
6	Analysis: The appropriateness of statistical analysis' techniques	6	Evidence of Policy Effectiveness is clear
7	Replications: The exact or conceptual reproduction of both the intervention implementation and evaluation	7	Feasibility-The adoption of the proposed policy is feasible
8	Plausible threats to validity (excluding lack of retention): The degree to which the evaluation design and implementation addresses and eliminates plausible alternative hypotheses concerning program effects.	8	Feasibility-The implementation of the proposed policy is feasible
9	Integrity: The overall level of confidence that the reviewer can place in project findings based on research design and implementation	9	Policy's objectives regarding the needs of society for the set priorities are appropriate
10	Dissemination capability of program materials developed (training in program implementation, technical assistance, standardized curriculum and evaluation materials, manuals, fidelity instrumentation, videos, recruitment forms, etc.)	10	Efficiency-The ratio of the obtained results is commensurate with the amount of the resources used
11	Estimation of cost for the implementation of the intervention	11	Effectiveness-Objectives have been met or are being met
12	Cultural or/and Age Appropriateness	12	Transferability-The policy is transferable for other target groups
13	Ease of implementation of the Intervention	13	Transferability-The policy is transferable for other settings
14	Utility: The overall usefulness of the intervention. This rating is based on the quality of the evaluation's results	14	Sustainability-The sustainability of the policy's effects is evident
		15	Innovativeness-Policy uses an innovative/ original manner to achieve its goals
		16	Adaptive ness-Policy needs modifications in order to be reused
		17	Validity-Policy's actions are suitable for the achievement of the main goals

WP3: Partner list and contribution

Partners/ Subcontractors

Malcolm Barrow:

- Sent the selected practices and policies from UK
- Sent his proposals for the content of the ECaI

Denise Kendrick:

- Sent the selected practices and policies from UK
- Comments on the reports for good practices for drownings and good policies for road traffic and alcohol related injuries
- Sent her proposals for the content of the ECaI
- Pilot testing of the extraction forms

Giuseppe Massanoti:

- Sent the selected practices and policies from Italy
- Comments on questionnaire
- Comments on the report for good practices for road traffic and alcohol related injuries

Karl Kuhn:

- Comments on questionnaire
- Comments on the report for good practices for occupational injuries

Yousif Rahim:

- Pilot testing of the extraction forms

Associated Beneficiaries

Eva Negri:

- Sent the selected and policies from Italy
- Pilot testing of the extraction forms

Witold Zatonski: No contribution has been received so far from this partner

WP3: Questionnaire: Identification of success factors and barriers

Prepared By Center of Research and Prevention of Injuries, University of Athens

Respondent - General Information

Responder Name: [Replace with name of project manager]
Organization: [Replace with department name]
Postal Address: [Replace with department name]
E-mail address: [Replace with department name]
Phone: [Replace with department name]
Date: [mm/dd/yyyy]

Part A: General questions regarding the practice profile

Instructions for Part A completion: Please, write your answers in the shadowed frames or select the respective boxes by clicking. You could use the Tab key or the mouse for moving from field to field. In the shadowed fields you can write as many words as you wish. Please check, add and, if necessary, correct the information we filled in respondent's general information and in question 1.

1. Title of the program/ intervention/ practice:

2. Description of the program (Specific goals and objectives, background, activities and other relevant information.):

3. Group(s) targeted (*Choose as many as appropriate*):

☐ Children
☐ Adolescents
☐ Adults
☐ Elderly
☐ Other, please define

4. Duration of the intervention: Starting day: Ending day:

5. Level of implementation

☐ International ☐ National ☐ Regional ☐ Local

Please, define:

6. Total budget used: (in EUR: 1 € = $ 1,2680-90)

☐ <10.000 €
☐ 10.000-50.000 €
☐ 50.000-100.000 €
☐ 100.000-200.000 €
☐ 200.000-500.000 €
☐ >500.000 €

Other:

7. Staff (number):

Part B: Success factors and barriers of the practice

Instructions for Part B completion

In this part you will be asked

a. To list and describe up to three specific factors under each of the following categories that played a role in the implementation of your intervention. If a factor is not related at all, please leave the fields empty and all the boxes unchecked;

b. To characterize for each factor if it was a success factor or a barrier supporting or hindering the success of your intervention by rating it. Rating is done by clicking the appropriate box on the given scale;

c. To describe in brief the activities you undertook in order to maximize the effect of the facilitator or to overcome the barrier.

FACTORS (Categories)

- Political factors
- Financial factors
- Administrative factors
- Infrastructure factors
- Public will factors
- Educational factors
- Unforeseen factors
- Ethical issues

NOTE: In the following pages, below of each category of factor there are some specific examples related to the context of the factor; have in mind that these are just examples and no the exhaustive list of potential alternatives for each factor in any case. For each factor category, you asked to give up to three specific factors (the most important according to your opinion).

Definition of basic terms

Success factors/ facilitators: Factors (predicted and/or unforeseen) likely to have a positive effect on (injury prevention) programs. In the following sections you will be asked to identify and describe which specific success factors that contributed to the success of your intervention, as well the actions you undertook to maximize their facilitating effect.

Barriers: Factors (predicted and/or unforeseen) that hinder the implementation of the (injury prevention) program. In the following sections you will be asked to identify and describe the specific barriers/ obstacles that hindered implementation of your project, as well as the actions you undertook in order to minimize their effect.

POLITICAL FACTORS

Political factors refer in general to political climate and more specifically if an injury priority area considered within a political context. The likelihood of funding and ongoing support, for example, may be partially dependent on political factors. Below are some examples:

- Regulations: Authoritative rules released by government and/or public services (as a process) aiming to control some situation related to the objectives of the intervention
- Legislation: Public health legislation, background papers, and laws enacted by a legislative body and that are related to the objectives of the intervention
- Political prioritization: Any evidence of political decision making that placed the intervention higher up on political agendas
- Existence of a national plan for injury prevention. Identification of any such plans that serve as a framework for actions that make relevant partners and stakeholders responsible or that define institutional liabilities

Factor 1 (Please, specify):	
Use this scale to rate the factor: **Facilitator** ☐ ☐ ☐ ☐ ☐ ☐ ☐ **Barrier**	
Please, describe the ways found in order to maximize the effect of the facilitator or overcome the barrier:	

Factor 2 **(Please, specify):**	
Use this scale to rate the factor: **Facilitator** ☐ ☐ ☐ ☐ ☐ ☐ ☐ **Barrier**	
Please, describe the ways found in order to maximize the effect of the facilitator or overcome the barrier:	

Factor 3 **(Please, specify):**	
Use this scale to rate the factor: ☐ ☐ ☐ ☐ ☐ ☐ ☐ **Facilitator** **Barrier**	
Please, describe the ways found in order to maximize the effect of the facilitator or overcome the barrier:	

FINANCIAL FACTORS

Allocation of appropriate resources for the implementation of preventive actions including support for capacity building across multiple sectors and for stimulating coordination of the different sectors related to injury prevention.

- Governmental support: Ministry of Health/ Labour/ Interior, subsidies, grants, tax cuts/ rebates, or any forms of support from the government for injury prevention programs
- Private (non-governmental) funding: e.g. from health insurance companies, pharmaceutical companies, etc.
- Other sources: voluntary work, donations, etc.

Factor 1 (Please, specify):	
Use this scale to rate the factor: ☐ ☐ ☐ ☐ ☐ ☐ ☐ **Facilitator** **Barrier**	
Please, describe the ways found in order to maximize the effect of the facilitator or overcome the barrier:	

Factor 2 **(Please, specify):**	
Use this scale to rate the factor: ☐ ☐ ☐ ☐ ☐ ☐ ☐ **Facilitator** **Barrier**	
Please, describe the ways found in order to maximize the effect of the facilitator or overcome the barrier:	

Factor 3 **(Please, specify):**	
Use this scale to rate the factor: ☐ ☐ ☐ ☐ ☐ ☐ ☐ **Facilitator** **Barrier**	
Please, describe the ways found in order to maximize the effect of the facilitator or overcome the barrier:	

PUBLIC WILL FACTORS

- Degree of public acceptance: Whether public acceptance has been achieved or not. Initiatives undertaken for gaining public acceptance (e.g. involvement of community members in the development process of intervention, use of appropriate local language(s), age and culture appropriate materials, proper means of communication, etc.)
- Accessibility of the population in community programs. Examples: language, participation fee (if required or not), cultural sensitive issues, program promotion (if the program is well-promoted, attractive program materials), etc.
- Recruitment method/ Participation rates: Strategies selected for recruiting target groups' people.
- Individual characteristics of the target group(s): e.g. demographic data such as age, gender, socio-economic status, educational background, cross-cultural differences etc.

Factor 1 (Please, specify):	
Use this scale to rate the factor: ☐ ☐ ☐ ☐ ☐ ☐ ☐ **Facilitator** **Barrier**	
Please, describe the ways found in order to maximize the effect of the facilitator or overcome the barrier:	

Factor 2 **(Please, specify):**	
Use this scale to rate the factor: ☐ ☐ ☐ ☐ ☐ ☐ ☐ **Facilitator** **Barrier**	
Please, describe the ways found in order to maximize the effect of the facilitator or overcome the barrier:	

Factor 3 **(Please, specify):**	
Use this scale to rate the factor: ☐ ☐ ☐ ☐ ☐ ☐ ☐ **Facilitator** **Barrier**	
Please, describe the ways found in order to maximize the effect of the facilitator or overcome the barrier:	

ADMINISTRATIVE FACTORS

Factors related mainly to the administration of a project affecting its output and impact. Below are some examples:

- Leadership/ Coordination: coordination skills, type of coordination (e.g. hierarchical etc.)
- Human resources /Voluntary work: e.g. dependence of the intervention on a few (or many) key individuals
- Skilled staff/ technical expertise
- Communication methods: internal (e.g. communication with colleagues); external (e.g. promotion of project)
- Appropriate preparatory work: e.g. data collection prior to goal formulation, data collection about the target group
- Monitoring of the implementation: e.g. existence of measurable goals for the short- and long- term progress of the intervention
- Program development: (financial, other resources etc. that work as pushing or pulling factors)
- Available time for the intervention

Factor 1 (Please, specify):	
Use this scale to rate the factor: ☐ ☐ ☐ ☐ ☐ ☐ ☐ **Facilitator** **Barrier**	
Please, describe the ways found in order to maximize the effect of the facilitator or overcome the barrier:	

Factor 2 **(Please, specify):**	
Use this scale to rate the factor: ☐ ☐ ☐ ☐ ☐ ☐ ☐ **Facilitator** **Barrier**	
Please, describe the ways found in order to maximize the effect of the facilitator or overcome the barrier:	

Factor 3 **(Please, specify):**	
Use this scale to rate the factor: ☐ ☐ ☐ ☐ ☐ ☐ ☐ **Facilitator** **Barrier**	
Please, describe the ways found in order to maximize the effect of the facilitator or overcome the barrier:	

INFRASTRUCTURAL FACTORS

The facilities that are in place in a country or area like the state capacity, communication facilities, public and/or private institutions needed for security, health, and education. Below are some examples:

- Networking: The creation of partnerships that enables bringing together a wide variety of NGOs, and public organizations to find innovative solutions and achieve specific results
- Community approach: Community-based approaches representing a shift in emphasis from an individual to a social responsibility for health and stressing the importance of multiple interventions, which can complement and reinforce each other in particular geographical areas
- Use of existing infrastructures: Use of the basic facilities, services, and installations (e.g. health care systems, schools, workplaces, communities) needed for the functioning of the community, specifically the National and local infrastructures for injury prevention and safety promotion
- Technical support: development of injury prevention projects requires support at all stages - research, demonstration and implementation- to help achieve strong and competitive capabilities (e.g. services, equipment)

Factor 1 (Please, specify):	
Use this scale to rate the factor: ☐ ☐ ☐ ☐ ☐ ☐ ☐	**Facilitator** **Barrier**
Please, describe the ways found in order to maximize the effect of the facilitator or overcome the barrier:	

Factor 2 **(Please, specify):**	
Use this scale to rate the factor: ☐ ☐ ☐ ☐ ☐ ☐ ☐	**Facilitator** **Barrier**
Please, describe the ways found in order to maximize the effect of the facilitator or overcome the barrier:	

Factor 3 **(Please, specify):**	
Use this scale to rate the factor: ☐ ☐ ☐ ☐ ☐ ☐ ☐	**Facilitator** **Barrier**
Please, describe the ways found in order to maximize the effect of the facilitator or overcome the barrier:	

EDUCATIONAL FACTORS

Include awareness of the benefits of injury prevention efficacy among the general public.

- Adaptation to the educational level: *intervention adapted to the educational level and comprehension ability of the participants.*
- Level of public awareness
- Existing educational campaigns

Factor 1 (Please, specify):	
Use this scale to rate the factor: ☐ ☐ ☐ ☐ ☐ ☐ ☐	**Facilitator** **Barrier**
Please, describe the ways found in order to maximize the effect of the facilitator or overcome the barrier:	

Factor 2 **(Please, specify):**	
Use this scale to rate the factor: ☐ ☐ ☐ ☐ ☐ ☐ ☐	**Facilitator** **Barrier**
Please, describe the ways found in order to maximize the effect of the facilitator or overcome the barrier:	

Factor 3 **(Please, specify):**	
Use this scale to rate the factor:	☐ ☐ ☐ ☐ ☐ ☐ ☐ **Facilitator** **Barrier**
Please, describe the ways found in order to maximize the effect of the facilitator or overcome the barrier:	

UNFORESEEN FACTORS

- Specific social events: *Events that stimulate the public interest and create a specific climate – positive or negative- regarding the content of the intervention*
- Environmental changes: *Physical phenomena or public structures' development related with the content of the intervention*

Factor 1 (Please, specify):	
Use this scale to rate the factor:	☐ ☐ ☐ ☐ ☐ ☐ ☐ **Facilitator** **Barrier**
Please, describe the ways found in order to maximize the effect of the facilitator or overcome the barrier:	

Factor 2 **(Please, specify):**	
Use this scale to rate the factor:	☐ ☐ ☐ ☐ ☐ ☐ ☐ **Facilitator** **Barrier**
Please, describe the ways found in order to maximize the effect of the facilitator or overcome the barrier:	

Factor 3 **(Please, specify):**	
Use this scale to rate the factor:	☐ ☐ ☐ ☐ ☐ ☐ ☐ **Facilitator** **Barrier**
Please, describe the ways found in order to maximize the effect of the facilitator or overcome the barrier:	

ETHICAL FACTORS

Ethical issues in public health relate to the dual obligations of public health professionals to acquire and apply scientific knowledge aimed at restoring and protecting the public's health while respecting individual autonomy. Ethics in public health involves interplay between protecting the welfare of the individual, and the public health goal of protecting the public welfare. Other ethical concerns in public health relate to the need to ensure a just distribution of public health resources.

- Risk's minimization/ providing benefits: adherence of health professionals to the obligations to acquire and apply scientific knowledge aimed at maintaining and restoring public health while respecting individual rights. Potential societal benefits must often be balanced with risks and potential harms to individuals and communities, such as the potential for stigmatization or invasions of privacy.
- Avoiding and disclosing conflicts of interest: dealing with potential conflicts of interest, in order to maintain public trust in epidemiology and sustain public support for health research.
- Informed consent: ensure that research participants make a free choice and also give institutions the legal authorization to proceed with the research.
- Privacy and confidentiality: provision of protection of the confidentiality of participant's health information.

Factor 1 (Please, specify):	
Use this scale to rate the factor:	☐ ☐ ☐ ☐ ☐ ☐ ☐ **Facilitator** **Barrier**
Please, describe the ways found in order to maximize the effect of the facilitator or overcome the barrier:	

Factor 2 **(Please, specify):**	
Use this scale to rate the factor: **Facilitator** ☐ ☐ ☐ ☐ ☐ ☐ ☐ **Barrier**	
Please, describe the ways found in order to maximize the effect of the facilitator or overcome the barrier:	

Factor 3 **(Please, specify):**	
Use this scale to rate the factor: **Facilitator** ☐ ☐ ☐ ☐ ☐ ☐ ☐ **Barrier**	
Please, describe the ways found in order to maximize the effect of the facilitator or overcome the barrier:	

Part C: Future –Possibilities for Replication

Instruction for Part C completion: Please fill in the following questions if applicable to your intervention. In questions C.4. & C.5 please, refer the factor nominally and rate it (there is no need to define).

C.1. What is the potential for applying all or parts of your practice to different settings (e.g. regions and/or social environment)?

C.4. What conditions/factors would you consider as the three most important factors for successful replication?

Please write and rate them beginning with the highly important.

1.
2.
3.

C. 5. What conditions/ factors would you consider as the three most important obstacles for successful replication?

Please write and rate them beginning with the highly important.

1.
2.
3.

C.2. According to your knowledge, has the practice been replicated elsewhere?

☐ Yes ☐ No ☐ don't know

If yes, was it effective?

☐ Yes ☐ No ☐ don't know

If yes, where and by whom was it replicated?

C.3. Will your organization implement this practice in the future?

☐ Yes ☐ Probably not

☐ Probably yes ☐ No

C. 6. Is there anything further you would like to say that might assist us with the identification of success factors and barriers?

Appendix IV

WP4: List of participants of the first meeting
Milan 3-4 July 2006

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WP4: Selected interventions: Falls among the elderly

1. Programme of muscle strength and balance training (individually delivered)
2. Tai-Chi (group exercise)
3. Mental health monitoring and social welfare issues*
4. Visual and hearing monitoring*
5. Cardiac pacing
6. Withdraw psychotropic medication/revision of medication
7. Raising awareness/education (clothing, environmental factors/conditions)
8. Environmental hazard assessment and modification (in high risk groups)

*The underlined interventions were not evaluated in Gillespie et al, 2004, but we have decided to include them because they may be included in a multistrategy intervention and of their broader scope in improving quality of life, beyond the prevention of falls