
Report on the Swansea Injury Forum, a series of meetings on data and methods for injury prevention

Swansea University, Wales, United Kingdom

17th - 20th September 2010

Executive Summary

This report summarises the findings of the Swansea Injury Forum, a joint meeting of the International Collaborative Effort (ICE) on Injury Statistics, Global Burden of Disease Injury Expert Group (GBD-IEG), and the ICD11 Injury and External Causes Topic Advisory Group, held at Swansea University in September 2010 immediately before the Safety 2010 conference in London. The series of meetings focused on injury statistics and measurement of the population burden of injuries.

The Swansea Injury Forum consisted of four meetings:

1. A day long meeting on 17th September on estimating the burden of injuries in Africa organised by the GBD-IEG;
2. A day long meeting on 18th September on global burden of disease methods for measuring injury, organised by the GBD-IEG;
3. A one and a half day meeting (19-20th September) of the ICE on Injury Statistics; and
4. A half day meeting (20th September) of the ICD11 Injury and External Causes Topic Advisory Group

The detailed agendas for each meeting are provided as Appendix A. The report summarises the main findings of the presentations and subsequent discussions, and concludes with a section on the need for future work in this field, including further meetings.

In keeping with the long tradition set by the ICE on Injury Statistics, the meetings took the form of forums or workshops, in which most participants were also presenters and active contributors to discussions. The meetings focused on methods, but with a sharp focus on application and usefulness of data for injury prevention. These meetings provide the most important forum, globally, in which the methods and understanding necessary for effective injury surveillance are developing. In addition, the forums provide a unique setting in which new and emerging contributors to the field can experience immersion into the field and its community of scholars and become known and involved. Critical to serving this function are the focused agenda of these meetings and the modest number of participants.

Conclusion 1: Technical forums or workshops on the methods underlying production and use of injury statistics for surveillance and prevention are an essential foundation for effective injury prevention and development of capacity for this.

The Swansea Injury Forum attracted 60 participants from 24 countries and six continents (Appendix B). They included most of the prominent participants in the ICE on Injury Statistics and the injury aspect of the current GBD project, as well as a remarkable contingent of researchers from Sub-Saharan Africa. Support provided by the WHO-VIP and the World Bank enabled the attendance of many of the African participants, and some others. This further broadening of participation beyond that achieved in previous methods meetings represents a substantial step towards the fully global scope that has been an aspiration of the Injury ICE.

Conclusion 2: Broadening of the scope of participation to include people from more parts of the world is desirable. Achieving this will require targeted efforts and funding support for participants, especially those from low-resource settings.

Looking to the future, WHO-VIP participants stated a set of questions central to injury prevention policy and practice, and which imply an agenda for injury surveillance and related work on injury data and methods.

- i. What do policy makers and program officers need to know (now, and in a few years)?
- ii. How to work with countries to define their own priorities and systems?
- iii. Where to invest given the IT advances and opportunities?
 - a. To facilitate timely data collection and dissemination
 - b. To provide useful/"actionable" information
- iv. What opportunities exist for technical collaboration?

- v. Where do we (countries, the field) want to be in 2 years? 5 years?

While much of the work presented at Swansea is relevant to that agenda, there is much more to be done. A high priority is for improved injury estimates for low income countries. Another is to improve information infrastructures and related human capacity in many countries, if not all. Better burden of injury estimates using comprehensive incidence and outcomes data are emerging. While this work is most advanced in some high income countries, it has potential value everywhere, and development and dissemination of the methods should be encouraged. There is much to be learned from each other and a clear need to strengthen collaboration to help with capacity development.

Conclusion 3: Assessment of priorities arising from the Swansea meetings should inform planning of the program of the next meeting.

Participants in these meetings have an 'applied' outlook. However, the specific information needs and priorities of policy-makers and prevention practitioners not necessarily well-understood by technical practitioners. Likewise, policy-makers and preventionists are not always aware of opportunities and of constraints that exist concerning injury statistics.

Conclusion 4: Future meetings should give further attention to ensuring that injury data and methods are well-attuned to practical needs for policy and prevention.

A need was identified for a reference group to work with WHO concerning future meetings. How this could be organised and funded needs further consideration. Meetings focusing on injury statistics and research have been held at, or in association with, most of the previous World Conferences. Hosting meetings in countries where the biennial world injury conferences are held helps to increase attendance and reduce the marginal costs of attendance. The form and oversight of meetings has varied; the ICE on Injury Statistics has the longest history, having met at most conferences. Recent meetings (Boston, Swansea) have been collaborations of the Injury ICE with other groups and organizations. The tradition of technical meetings on data to underpin injury prevention should be enabled to continue. For the future, a plausible approach is for meetings in association with the World Conferences, supplemented by one or two other meetings between these, depending on the spacing of the Conferences.

Conclusion 5: Injury statistical technical meetings should be held approximately once per year. A meeting should be associated with each World Conference on Injury Prevention and Safety Promotion. Additional meetings should be held between these at intervals of about one year.

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1. Background to the meetings

Injury is a leading cause of premature death and disability across the world. The impact of injury on individuals, families and communities is pervasive and the social and economic costs at all levels are considerable. Yet, most injuries and their consequences are preventable. The collection and promulgation of injury statistics are important components in measuring the trends and impact of injury, and for the prevention of injuries and the improvement of rehabilitation outcomes.

Injury is a 'Cinderella' disorder and compared to its share of global Disability Adjusted Life Years (DALYs), disproportionately little is spent on prevention or research. Unlike many chronic diseases there is little pharmaceutical or major charity involvement in supporting research and development, with the exception of recent developments, such as the Bloomberg Foundation's support for road traffic safety.

Improving the quality of injury statistics aims to achieve better outcomes for injury prevention, treatment and rehabilitation, and to minimise the personal, social and economic costs of injury. Accurate measurement of the burden of injuries, in particular, is an essential requirement contributing to a number of health strategies and objectives, including:

1. Monitoring trends on the impact of injuries at national level;
2. Supporting the development of appropriate national policy responses for both the prevention of injuries and the organisation of appropriate co-ordinated treatment and rehabilitation services;
3. Monitoring the effectiveness of strategies; and
4. Identifying research needs.

At the Safety2010 World Conference on Injury Prevention and Safety promotion held in London from 21st- 24th September, Ileana Arias, Deputy Director of the US Centres for Disease Control (CDC) made one of the opening keynote presentations. She spoke about the essential requirements for success in injury prevention and identified four key requirements of any strategy and operational plan:

1. The provision of leadership and technical assistance;
2. Effective collaboration between partners;
3. The dissemination and implementation of effective interventions; and
4. Collecting and using data for injury surveillance.

The Swansea Injury Forum, like past and future meetings of ICE and GBD-IEG fulfilled three of these four requirements, providing effective leadership and technical assistance, collaboration between partners, and particularly with respect to the collection and use of surveillance data in both high and low/middle income settings.

2. About the Swansea Injury Forum

The Swansea series of meetings provided a forum where key world leaders in the field of injury data, surveillance and measurement of population burden met to discuss and review developments and to consider how further progress could be made and shared across the globe. The meeting attracted a larger number of participants from a greater variety of countries than any previous meeting of the ICE or the GBD-IEG, with 60 participants from 24 countries and a number from WHO head quarters attending (see Appendix B for full list).

The meeting was made possible by core support from the World Health Organization and help from a number of local organisations, including: the St David's Medical Foundation, the School of Medicine, Swansea University, Public Health Wales NHS Trust, Children in Wales and the Thematic Research network for emergency UnScheduled and Trauma Care (TRUST). Support from the Violence and Injury Prevention program of the World Health Organization and the World Bank Global Road Safety Facility enabled the participation of twenty researchers and officials from low and middle income countries (LMICs), a very welcome development.

The meeting was opened by Ronan Lyons from Swansea University who hosted the events on behalf of ICE and GBD-IEG. He started by welcoming the participants and outlined that the aims of the series of meetings. These were to:

- learn from one another on how best to measure the burden of injuries in different settings: it was pointed out that no single country in the world has perfect data covering emergency departments, inpatients, deaths, disabilities and population surveys
- share information on developments in the field in relation to the identification of new sources of data or novel methodologies
- increase the scale and scope of collaborative working in order to strengthen capability and capacity for measurement of the injury burden nationally and internationally, with a particular focus on lower and middle income countries (LMICs) where the burden is highest.

3. Estimating the Burden of Injuries in Africa meeting (Day 1)

The purpose of this one day meeting was to:

- a. Discuss progress on developing regional and country estimates of the burden of injuries.
- b. Discuss the technical basis for cross-country collaboration on injury metrics, examining the similarities and differences in information architecture, and identifying needs for common methods.
- c. Discuss the value of such research collaboration to all participants with the aim of identifying how the partnership may be structured differently in the future.

Kavi Bhalla started by providing an overview of the project. The primary purpose of the Estimating the Burden of Injuries in Africa study is to improve estimates of the burden of injuries in Sub-Saharan Africa produced as part of the current revision of the GBD-2010 study. The project is structured around work in a selection of focus countries to develop methods that allow estimating national and regional burden of injuries using existing data sources.

The first session examined the data sources inventory available from six countries and led to discussions on the similarities and differences in information architecture. Poster presentations were made describing country data inventories and early results from the key data sources from: Ghana (Adofo Koranteng), Sudan (Safa Abdalla), Ethiopia (Kunuz Abdella), Nigeria (Uwom Eze), Uganda (Olive Kobusingye), and Mozambique (Jerry Abraham). The following types of common data types were identified from the national data inventories:

- a. Census data for estimating injury mortality envelopes
- b. Mortuary data for estimating injury mortality patterns
- c. Health and Demographic Surveillance Sites (HDSS) for estimating rural injury mortality patterns
- d. Injury surveys for estimating non-fatal injury incidence
- e. Hospital surveillance data.

The existence of a common architecture of country data sources provides an important technical basis for an international collaboration on analytical methods. The data sources have common technical issues (e.g. handling recall biases, estimating completeness) that require the development of a suite of analytical methods. Similarly, methods are needed to combine these data sources into coherent national burden of injury estimates. This was the focus of the second session. This session did not discuss some key data sources that were covered in later sessions and during the GBD-IEG meeting on 18th Sept. The second session was introduced by Kavi Bhalla with an overview of methods, followed by a presentation on using census data, which is a previously untapped source for estimating injury mortality. Many population censuses in Africa include a household mortality module, which occasionally includes a question about whether the death was from injury. Typically such an injury question is included as a weed-out question for estimating maternal mortality. However, analysis of responses to this question can provide accurate estimates of national injury mortality. A comparison of the national death registration data and the 2001 S. African census was used to establish face validity of census-based measurements. Census results from five other countries were also presented. This was followed by a presentation by Safa Abdalla that provided an early demonstration of how multiple data sources from Sudan can be combined to construct coherent estimates of the burden of injuries. Safa combined estimates of total injury mortality from the 2008 Census data with Omdurman mortuary data, to estimate the number (and road-user breakdown) of road injury deaths in Khartoum State and Urban Northern Sudan. She showed that her estimates were substantially higher than previously reported statistics.

The third session focussed on the use of mortuary data, which exist in most major urban centres in Africa. Several members of the project group have previously conducted research on injury mortality patterns using mortuary data collected retrospectively or prospectively. This session focused first on technical issues related with using mortuary data to estimate population---based injury mortality rates in the current project. Kavi Bhalla led with an overview of methods to estimate national urban injury mortality patterns from mortuary data, followed by crude estimates of completeness of mortuary data. The results suggest that completeness of city mortuary data (relative to injury deaths in the city) are higher than 60% in many cases. Next, Adofo Koranteng, William Ackaah, and James Damsere Derry presented results from an investigation of police under-reporting by record linkage of police and mortuary data in Kumasi, Ghana. The results showed that approximately 32% of the mortuary records could not be linked with police data.

Under-reporting levels were substantially higher for deaths that occurred outside Kumasi city, but did not vary much by site of death (hospital, brought-in-dead), gender, age, and road-user type. Finally, Uwom Eze concluded with a presentation that compared results from all seven mortuary datasets. The presentation showed that, in the current form, the datasets are difficult to compare directly because of several broad issues with mortuary data that include quality of cause coding, especially in retrospectively collected data (e.g. Uganda, Zambia, Sudan-Khartoum). The mortuary data show a common age pattern (dominated by young adult males) and some general similarities in causes, such as the high proportion of road injury deaths in all datasets.

Following the discussion of the existing mortuary data, the longer-term perspective on mortuary data was considered. The WHO recognizes the potential value of conducting injury surveillance at mortuaries. Joan Ozanne-Smith and Kidist Bartolomeos presented on the development of WHO/Monash University guidelines which will help to systematize processes for prospective mortuary surveillance. The panel reviewed the proposed mortuary data form. It was agreed that the quality of cause-coding of mortuary-based data collection will improve substantially once the standardized WHO instrument are used. However, the panel also felt that there are several other considerations that are important for the use of mortuary data for estimating injury mortality (such as estimating data completeness, documentation of medico-legal laws and practices) that were not discussed as part of the WHO guidelines.

The final (fourth) session involved a panel discussion on improving future international collaboration. Because of time constraints, part of this session was conducted in parallel with one of the ICE break-out sessions on 20th Sept. Collaboration is successful when all participants make progress towards their research and policy agendas. Thus, the session re-assessed the likely outputs of the current project in relation with the primary research and advocacy goals of the collaborators. Based on this, it was decided that two types of reports will be produced in this study. The first is directed at country policy makers and will be crafted either as national burden of injury reports (e.g. for Ghana), or on a topic of national importance, e.g. road injuries and/or homicide in Nigeria. The second are cross-country reports of the burden of injuries and thematic reports on methods (for mortuary, census, survey data). More details are available (including presentations) at <http://africa.globalburdenofinjuries.org/>.

4. Global Burden of Diseases Methods for Measuring Injury (Day 2)

This one day meeting was designed to provide an:

- a. Update on the work of the GBD-IEG and the broader GBD project;
- b. Opportunity to discuss specific aspects of the work; and
- c. Opportunity to reflect on implications of the work for injury measurement and statistics more broadly.

The meeting was facilitated by James Harrison and Kavi Bhalla. There were sessions focussing on injury mortality estimation, data for injury morbidity estimation, and tools and methods of injury morbidity estimation, followed by a discussion on the implications for future work.

Kavi Bhalla opened the first session on injury mortality estimation with an overview of the Global Burden of Disease project and followed with an overview of the global road injury mortality research.

Richard Matzopoulos then presented on the global estimation of homicide. James Harrison followed with a quality appraisal of WHO mortality database. Joan Ozanne-Smith and Kidist Bartolomeos built on their presentation from the preceding day on the potential for injury measurement in information poor settings using mortuary data.

The second session focussed on data for the estimation of injury morbidity. James Harrison provided an overview of the session. Finding data for the GBD project has, as expected, been challenging. A mixture of approaches is being adopted, including systematic literature searches for published incidence and prevalence data, the use of hospital inpatient and emergency department data and also population survey data. James Harrison and Claire Bryan Hancock presented on the results of the reviews of published literature. Saeid Shahrzaz followed with presentations on the availability of hospital inpatient data and population survey data.

The third session focussed on tools and methods to help with estimation of injury morbidity. Combining the (often patchy and unreliable) data to make estimates of injury burden is as challenging as finding data. Kavi Bhalla started with an overview of the general approach.

James Harrison presented a progress report on the development of new GBD disability weights for the calculation of the Years Lived with Disability (YLD) component of DALYs.

Saeid Shahrzaz and Claire Bryan Hancock followed with a presentation on the DISMOD 3 software, explaining what it is and how it is being used for injury estimation, and followed with a presentation using the software to combine data on TBI from data from literature, surveys and hospital data collections.

Ronan Lyons and Belinda Gabbe followed with a presentation of the methodology and results of the UK Burden of Injury (UKBOI) Study which prospectively followed up 1517 injured individuals and developed empirical disability weights for 13 nature of injury groups. Applying the UKBOI and original GBD methodologies to UK population data showed that UKBOI derived DALYs were two and a half times that of the GBD approach. This was due to empirical data contributing to higher disability weights than previous GBD methodology, longer durations of impact than estimated by panels for the GBD and access to population level emergency department (ED) data. Some two thirds of UK Years Lived with Disability (YLDs) occur in cases treated in emergency departments but not admitted to hospital. The UKBOI Study involved the creation of a series of excel spreadsheets to calculate population level Years of premature Life Lost (YLLs) and YLDs and which could be used in other countries to help with calculation of national burden of injury estimates.

The fourth session discussed the day's presentations and the implications for future work. Early in the life of the GBD-IEG a number of topics were raised by members as having implications for GBD work. In some instances, these were a special case of an issue with relevance to injury

statistics and measurement more broadly (e.g. case definition; severity). Others were more specific to the GBD project (e.g. the revision of reporting categories). Members of the group expressed interest in leading work on particular topics, and preparation of papers was foreshadowed. Progress has varied between topics. This session, led by James Harrison, provided an opportunity to revisit the topics, reflect on progress and discuss implications for future work. Discussions focussed on how to publish findings and methods, make data and methods more accessible, advocating change in data collections or coding classifications (ICD11) and identifying research questions arising from this work.

5. ICE on Injury Statistics meeting (Day 3)

Margaret Warner opened the meeting on behalf of Lois Fingerhut who was unable to attend. She welcomed the participants and introduced the work plan for the two day meeting. She gave a short history of ICE on Injury Statistics. ICE is an international activity which has been sponsored by the Centers for Disease Control and Prevention's (CDC) National Center for Health Statistics (NCHS). Meetings have been held annually since May 1994. The proceedings of the meetings and past presentations are available at: <http://www.cdc.gov/nchs/injury/advice.htm> .

The purpose of ICE is to provide a forum for international exchange and collaboration among injury researchers who develop and promote international standards in injury data collection and analysis. ICE aims to produce products of the highest quality to facilitate the comparability and improved quality of injury data. Previous ICE projects include: reporting frameworks on the external causes of injury mortality and morbidity and injury diagnoses for both morbidity and mortality; selecting a main injury among multiple causes of death; ICD comparability and definitions; occupational injury; household survey questions about injuries; poisoning definitions and classification questions; and technical assistance on the development of the ICECI. Current ICE work includes: the development of injury Indicators (fatal and nonfatal); injury severity measurement; the development of disability metrics; and improving the quality of external cause of injury coding.

The first ICE session on Non Fatal Injury Indicators (NFIIs) as measures of population injury incidence was organised by Colin Cryer and Rolf Gedeberg and facilitated by Colin Cryer . One aim of ICE is to develop indicators of the population incidence of injuries which can be derived from hospital admissions data but which are resilient to differences in health care settings and trends in clinical management. The literature on this topic shows that thresholds for hospital admission for all injuries vary between and within countries and are not constant. Hence the incidence of hospital admissions for all injuries cannot be used as a reliable indicator of the incidence of injuries in a country. ICE aim to identify a subset of injury diagnoses which are always admitted to hospital in every country which would serve as a reliable indicator of more serious injuries in order to track progress over time and to compare countries. Two approaches are being tested. The first involves trying to identify a subset of ICD9CM and ICD10AM diagnoses which are almost always admitted and the second involves the identification of a subset of diagnoses which have a high threat to life. It is hypothesised that there will be a high degree of overlap between the two.

The first presentation was by Colin Cryer and focussed on developing a basket of ICD diagnoses which were always or nearly always admitted to hospital (diagnosis specific probability of admission approach) and which would minimise pervasive health service effects in international comparisons. This work involved estimation of the probability of admission to hospital by specific ICD codes using ICD coded emergency department data in a number of countries: Australia, Canada, Denmark, Greece, Spain and the US. He was followed by Steven Macey who presented a five country (Wales, Scotland, England, Northern Ireland, Republic of Ireland) analysis of inpatient injury admissions, using a similar approach to identifying a sub set of injuries based on clinical judgement. Because some countries are still using ICD-9 while other countries have adopted ICD-10, Margaret Warner followed with a presentation that discussed international comparisons in the presence of different versions of ICD.

Pauline Gulliver presented on the current definition of serious non-fatal injury in New Zealand and posed the question as to whether these miss a material number of cases. She compared the existing New Zealand operational definition of serious non-fatal injury: principal diagnosis S00-T78 *and* first listed e-code V01-Y36 *and* ICISS score ≤ 0.941 , the latter representing a 6% threat to life with an alternative approach (any diagnosis in the range S00-T78, *and* first listed e-code V01-Y36 *and* ICISS score ≤ 0.941) and concluded that the existing definition does miss a substantial number of cases. Her alternative definition increases the total number of injuries by 7%. Increases were more substantial for serious non-fatal self harm injuries (17% increase) and

falls (8%). The proposed new definition for serious non-fatal injuries includes cases which fit the following criteria: ≥ 1 diagnosis in range S00-T75, T78.8, T79 with a first listed e-code in range V01-Y36 and an ICISS score ≤ 0.941 . This alternative definition would capture cases whose principal diagnosis code (the first diagnosis listed) was outside of the injury chapter, provided that at least one additional diagnosis was an injury coded to a diagnosis within the ranges listed, and the injury diagnoses were serious as measured by ICISS.

Hesham El-Sayed followed with a presentation on childhood unintentional injury surveillance in four cities in lower and middle income countries (LMICs) and how and why to measure injury severity. The study illustrated the feasibility of documenting the burden of childhood injuries and of undertaking standardized child injury surveillance on the health facilities in LMICs. The results showed that burden of childhood injuries on the studied hospitals was substantial. It also identified the need for tailored injury prevention research in LMICs and to encourage the conduct of interventional trials in such settings. The data from this study contributed to the WHO World Health Report 2008 and to country specific reports.

The second ICE session was an update on the World Health Organization's Violence and Injury Prevention programme by Margie Peden, with a particular focus on data-related global activities. The areas of work include: collating, analysing and disseminating global data; promoting and facilitating improved collection of data; and promoting and facilitating international research. She outlined the main contents of the global data which includes: 50 years data in the WHO mortality database, the GBD updates with 193 countries in the most recent update from 2004, the status reports, the Global School Health Survey, the STEPS Risk Factor Survey and introduced the new web dissemination platform – the Global Health Observatory. Much of the presentation dealt with making data easier to use, capacity development and research. She then outlined national and international challenges, planned activities and opportunities for international collaboration.

National challenges include:

- Data gaps
 - Minimum data sets, (Hospital, Fatality, vehicle , road, passenger)
- Standardization of data
- Data quality issues
 - Variability of statistics between existing data
- Recognition of the complexity of data collection (cost, burden, different disciplines)
- Lack of capacity – human resource and skills (analysis, communicating results)
- Not only a health problem
- Need for reliable and timely data
- Need for better indicators
- Need for countries to have a complete and reliable databases
 - Need to link data to concrete action

International challenges include:

- Need for global indicators
- Coping with varying degree of data quality (completeness and coverage) between countries
- Difficulties in access to country databases and local research
- Linking data to concrete action
- Helping to build capacity at a country level.

The presentation concluded with the identification of a number of areas where there were opportunities for international collaboration:

- Technical collaboration
 - Development of normative documents, tools and instruments
 - Preparation of technical reports on pre-defined topic
- Facilitating North-South and South-South collaboration
 - Capacity development (regional and national training)

- Preparation of manuscripts and discussion papers on various topics
- Multi-centre research

The third ICE session on Non Fatal Injury Outcomes (NFIOs) was facilitated by Belinda Gabbe. This session focussed on the progress of several groups in measuring non fatal outcomes such as functional deficits and disability. The group considered how disability weights from a variety of existing studies could be combined to develop improved metrics for the calculation of national and global burden of injury estimates.

Ronan Lyons presented first on “Measuring the population burden of injuries: implications for global and national estimates using different approaches”, on behalf of the UK Burden of Injuries Research Group. This demonstrated that an alternative approach to measuring the population burden in the UK produced a 2.6 fold higher rate than the original GBD approach. This was due to three factors; the UKBOI prospective study of some 1500 injured patients produced higher disability weights and durations than the GBD panel approach; fewer cases fell into the ‘other category’ for which there were no GBD disability weights; and the inclusion of emergency department data provided incidence and outcomes data missing from the GBD. Even though ED treated but non admitted cases had lower DWs than admitted cases the much higher incidence of such cases resulted in two thirds of YLDs coming from non admitted cases in the UK. In countries with less well developed or accessible health services the proportion of YLDs in non admitted cases would be even higher.

Juanita Haagsma presented on the work of the European Commission funded INTEGRIS project and outlined the creation of a new set of disability weights for the 39 EUROCOST nature of injury groups. These were created from combining empirical data from two Dutch studies and also panel data from the Dutch valuation study where empirical data were deficient. However, it was not possible to create disability weights for some categories and disability weight estimates for some categories are imprecise due to small numbers. This study identified the need for meta-analyses of data from around the world to remedy these deficiencies. A burden of injury calculation for the Netherlands was conducted using the new INTEGRIS disability weights. This showed that three quarters of DALYs in the Netherlands were due to YLDs.

Shanthi Ameratunga presented on the influence of environmental factors on participation, activities and quality of life following injury. She started by discussing the concepts behind disability and outlined the development of the International Classification of Functioning (ICF). She outlined the results of a literature review of 29 studies in this field and reported on how few of the studies focussed on the impact of the environment on disability. She identified an urgent need for observational studies in low- and middle-income countries where environmental barriers are likely to be highest and called for intervention studies which were needed to establish causality in environment/disability relationship; demonstrate modifiability of environmental influences on disability; and identify most effective approaches for reducing disability through environmental modification. Shanthi’s presentation also highlighted the limitations of the GBD study approach to assigning disability weights related to “within in the person” concepts (i.e. vignettes focusing on impairment and limited aspects of activities of daily living), an approach that fails to recognise the impact of injury on participation and the capacity of the person to achieve their pre-injury level of societal functioning.

James Black presented the results of a meta-analysis of global EQ-5D injury data. This work was carried out by an international collaborative group and included data from the New Zealand POISE study, the Dutch burden of injury studies, the UK Burden of Injury Study, and many other studies. There were more than 10,000 patient level data points included in the analysis, which represents 75% of the known EQ5D data from empirical studies in the world. The study showed that residual impairment is very common in many injury groups.

The fourth ICE session involved updates from a number of additional international projects. Diego Zavala led with a presentation and discussion on North–South Collaboration, outlining the results of a web based survey which was undertaken to gain an understanding of the degree of collaboration between individuals and/or institutions on injury prevention and control around the world, especially between those operating in the Global North and Global South. Participants

were identified through existing advocacy and research networks, including : IPPNW, Violence Prevention Alliance and ICE, e-newsletters, and a snowball technique. The presentation outlined the differences between networking, coordination, cooperation and collaboration. The survey had 62 (37%) respondents. Just over half of respondents have ongoing projects initiated within the past five years. Most frequent areas of work were inter-personal violence and non-intentional injuries in general, followed closely by road traffic injuries. It was not possible to determine who initiated or made decisions in joint projects. The major benefit of collaboration identified by both partners was technical assistance and/or capacity building. The most frequent obstacle identified by partners in the North was poor communication whilst partners in the South identified difficulties in the completion of goals. About half of the respondents reported engagement at the highest level of collaboration which implies going beyond the first three levels of collaboration. Based on the preliminary discussions on the GBD work in Africa the group plans to follow up with a proposal to develop a South-North ICE project that aims for the highest level of collaboration. One proposal may be to focus on primary data collection, such as mortuary data in a selected number of countries in Africa following the pilot work already done and possibly elsewhere.

James Harrison then followed with a brief update on progress with the development of ICD11. Since this was the focus of the final, smaller group meeting of the series on 20th September, his comments are summarized in that section of this document.

Kirsten McKenzie presented next on the work she and Lois Fingerhut were doing on restructuring the external causes chapter for ICD-11 to improve the quality of external cause data. The title of her presentation was “Restructuring External Causes in ICD-11: Improving the Quality of Codes for Injury Statistics”. The aim of this work is to develop a proposal for how the external cause chapter of the ICD could be restructured in ICD-11 to provide better quality codes for injury statistics. They noted a lack of revision guidelines around: code ranges for external cause; code length restriction; requirements for continuity of codes/categories; and relationships between ‘use case’ versions. Many issues with the ICD-10 approach to external causes were briefly identified and discussed. The twelve draft proposals for change to the external cause chapter were summarised and discussed. One of the most important issues is the proposal to change the code structure from mechanism/object nested within intent to a structure where intent and object are nested within mechanism-. The group consensus was that the order of the core external cause code in ICD-11 should be mechanism-intent-object. Whilst work on this is ongoing it would appear that there would be similar version of ICD for mortality and morbidity with core external cause codes: mechanism, intent, object, and additional required codes for place and activity. A research use case is being developed which would be a multidimensional version (like ICECI) and which would contain the following dimensions: mechanism, object, intent, place, activity, alcohol/drug use, risk factors, counterparts etc and an algorithm to group dimensions into ICD codes. There would also be a short multidimensional version for lower resourced setting use with the following dimensions: mechanism, object, intent, place, and activity. This is work in progress and there is still opportunity to comment and get involved. The work is significantly under-resourced and next phase of work will require significant time investments. Additional expertise in each domain and people to invest time in contributing to this are needed.

Kidist Bartolomeos concluded the session with a presentation on the “Global Health Observatory – a home for indicators?” She described how WHO's work on data and statistics is a core activity, mandated in the Organization's constitution. Production and dissemination of internationally comparable data and statistics for all Member States is a key activity for WHO. WHO collects analyses and synthesizes a large amount of health related data from Member States. Data are often collected by individual departments on specific health topics and kept in distinct databases and consequently users often find it difficult to identify and access the data they need to answer specific questions. Increasing demand for health information requires a dynamic approach to analyzing, synthesizing and communicating relevant information to users.

The Global Health Observatory (GHO) is WHO's new gateway to accurate, timely health related data and statistics from around the world and will act as the main health statistics repository. It will support data underpinning health policies and programmes by: compiling and verifying major sources of health data within WHO; providing easy access to country data and statistics; and

analyzing data and presenting scientifically sound information in user friendly formats with basic metadata.

The main target audiences for the GHO are policymakers and public health professionals (in practice, research and education) in Member States and international organizations, the general public and the media. The GHO disseminates information in three ways: a web portal providing one entry point to WHO's statistics and analyses; a data repository that includes easy links to all major data bases; and analytical reports on specific and cross cutting topics. The GHO will contain the WHO's Indicator and Measurement Registry (IMR), a central source of indicator definitions in text and computer-readable formats.

This development could be a timely tool for the work of ICE on indicators and provides opportunities for future collaboration on many areas. The presentation finished with discussion of a series of challenges outlined by Kidist. The need for an 'Injury Reference Group' to support this work was discussed. This group could help with the following questions:

- What do policy makers and program officers need to know (now, in few years)?
- How to work with countries to define their own priorities and systems
- Where to invest given the IT advances and opportunities
 - To facilitate timely data collection and dissemination
 - To provide useful/"actionable" information
- What opportunities exist for technical collaboration
 - Where do we (countries, the field) want to be in 2 years? 5 years?

6. Small group ICE meetings (Day 4)

Separate meetings were held on the development of Non Fatal Injury Indicators and Non Fatal Injury Outcomes, followed by reports back to the entire group and discussions on findings and implications for future work.

6.1 Non Fatal Injury Indicators

The Indicators of Serious Injury Incidence Work Group convened on the 20th, facilitated by Colin Cryer. The aim of the work group is to produce an agreed specification for indicators of serious injury incidence. The work group agreed that:

“The primary purposes of the injury Indicators (rates and trends) are: to report, in a standardised way, for monitoring the impact of preventive efforts (eg. tracking trends in injury rates); and / or for international comparison.”

Starting points were:

- a) A previous incomplete draft of the specification for a general injury morbidity indicators, derived from hospital data.
- b) Results of the project that aimed to identify diagnoses with consistently high probabilities of admission to hospital across several countries.
- c) A draft proposal, produced by Colin Cryer, for international comparisons of serious injury indicators across 10 countries (He is submitting a proposal to the New Zealand Health Research Council for work on international comparisons of morbidity indicators);
- d) Pauline Gulliver’s (IPRU) presentation advocating an expanded case definition for serious injury
- e) A presentation, made during the work group session, by Rolf Gedeberg on ordered risk categories – described below.

The major issue to resolve was agreement on case definition. The focus is serious injury, since these injuries provide the opportunity to control for bias (e.g. health service effects) in any comparisons. Also, the focus was on both rates and trends. Although we aim to reduce the bias associated with international comparisons of rates, within country trends can be produced for which the effects of external factors are minimised – and so stable international comparisons of trends can be made. International comparison of trends is considered to be less likely to be misleading than comparisons of rates. This is because rates often differ at least partly, and sometimes substantially, because of different health service effects (e.g. related to service availability, or counting rules). In contrast, trends tend to be fairly stable over a range of variation in health service effects.

The group worked through the draft specification developed following the 2008 Washington DC meeting. Issues raised during the discussions were as follows:

1. Scope: There was a strong push to focus not on ‘non-fatal injury indicators’ but on ‘morbidity indicators’. Additionally, it was argued that they should be serious injury indicators; selected injuries that are serious enough to be treated in hospital – whether they survive or die. So the concept we are interested in measuring is ‘the incidence rate of serious hospitalised injury’.
2. Definition of ‘Serious Injury’: There was an appeal to have an operational definition of serious injury based on a small number of diagnoses – sentinel diagnoses. While comprehensive data may not always be available in some LMICs, having an agreed set of diagnoses provides a ‘road map’ on what data to collect. The indicators will drive the collection of the necessary data.

3. Numerator - Description: A revised Description was agreed as ‘*A sentinel set of serious TTL injuries that present at hospital for treatment*’. This could include those that present at ED and subsequently die or those admitted.
4. Numerator - Case Definition: There was a discussion around ICISS-based and sentinel diagnosis-based case definitions. One view was that a sentinel diagnosis-based definition is more resistant to health services effects. It was whilst discussing case definition that Rolf Gedeberg was invited to present on ICISS.
 - 4.1. Rolf presented ‘*Ordered Risk Categories for ICISS*’. His aim is to produce diagnosis-specific survival probabilities (DSPs) that can be used by any country to produce ICISS scores. He has circulated a proposal with a request for data to facilitate this. Once the data is received, it would take little time to produce the DSPs. The other part of his presentation was the production of ICISS risk categories, based on cut-points on the ICISS 0-1 scale – to generate risk categories: minor, moderate, serious, severe, critical. Discussion included question around whether separate DSPs are needed for children, adults, older people, whether there is a need for weighted averages when producing combined DSPs, validity for LMICs of DSPs generated from high income countries’ data. Rolf finished with a request for data from additional countries. Margie Warner advised that she and her colleagues are looking at a similar process for ICD-9-CM with US data.
 - 4.2. Rolf’s presentation was discussed in terms of how it can be used for the morbidity indicators case definition. One view was that the stratification was preferred since it shows the complete picture. Discussion was unresolved regarding whether to use the ICISS approach to indicator case definition, or the sentinel diagnosis approach. This would be revisited once Rolf has the results of the work described above, and the diagnoses identified as having significant threat to life have been examined within each DSP severity strata.
5. The work group agreed to liaise between now and the next meeting in order to develop a complete draft specification by that meeting. It is likely that the case definition will be based on the work of a number of ICE members including Colin Cryer, Pauline Gulliver, Rolf Gedeberg, Ronan Lyons and Steven Macey.

6.2 Non Fatal Outcome Indicators

The Non Fatal Outcome Indicator group re-convened on the 20th, facilitated by Belinda Gabbe and Ronan Lyons. The group discussed many aspects of the measurement of disability post injury and methods of incorporating disability weights and durations into the calculation of population DALYs. Whilst it was recognised that the group and the field in general had made considerable progress over the past year there were still a number of issues which require further research and also consideration of how to maximise the use of existing knowledge and data. These issues are listed below:

1. Disability weights. The use of panel derived disability weights (DWs) compared to those derived from empirical data collected from injured individuals. It is clear that DWs are substantially higher for most injury groups when empirical data are used. Further work is required to understand the reasons behind this and the impact of decisions on using either panel or empirical data on national and global estimates of the burden of injury. One issue seems to be that the durations of impact are generally much longer than the descriptors of injuries used in the vignettes for the panel studies.
2. Combining data from different studies. Whilst work has started on some meta-analyses of individual level data more is needed in order to refine estimates for injury groups. In particular we need to be able to combine data from studies using different instruments such as EQ5D, SF12, HUI3, etc.
3. Use of ED and inpatient data. It is clear from both the UK Burden of Injury (UKBOI) study and the Dutch BOI Study that ED data and disability weights for such data need to be

combined with inpatient data if the burden is not to be grossly underestimated. Further studies are required which include both ED and inpatient data.

4. Grouping issues. Injury diagnoses need to be grouped into clinically meaningful homogenous groups. Whilst several groupings exist, in particular the Dutch Burden of Injury¹³ category and EUROCOST 39 category groups, these are not ideal and further work is required to produce different groups using data from the empirical burden of injury studies and from those trauma registries with outcome data.
5. Disability weights from lower and middle income countries (LMICs). So far the empirical and registry studies have been carried out in high income countries with well developed health services. It is inevitable that outcomes will be poorer and residual disability will be higher in countries without such services. Whilst the disability weights from the high income countries can be used to estimate YLDs in LMICs these will be an underestimate. Some work has commenced e.g. Viet Nam, where the UKBOI study is being replicated but more studies in LMICs are needed.
6. Disability weights for children. There is very little data on post-injury disability in children although a small number of studies are underway in the UK and Canada. Obtaining DWs for children is challenging as there are additional ethical issues involved in recruitment of children into studies, issues with administering instruments to children of all ages, and the use or development of appropriate instruments for such age groups.
7. Proxy disability weights. Many seriously injured individuals, those with pre-existing cognitive impairment and young children cannot complete the instruments used in adults to produce DWs. In some studies proxy respondents have been used but further work is required to validate this approach. It is a particular issue in TBI – a major contributor to YLDs in many settings.
8. ICD11. The development of ICD11 provides an opportunity (and also a risk) to developing more heterogenous clinical categories which would support the measurement of injury severity and calculation of DALYs. For example, improving the coding of fractures by the addition of categories for involvement/not of joints would be very helpful as joint involvement is a major predictor for residual problems if fracture reduction is not perfect.

7. ICD11 Injury and External Causes Topic Advisory Group (Day 4)

This meeting was open to interested participants in the full meeting. It was convened by James Harrison, Chair of the Technical Advisory Group (TAG) on injury and external causes for the ICD 11th revision. He and Dr Kirsten McKenzie made presentations, invited questions and comments and sought input from participants on a set of issues and questions concerning the revision of the External Causes chapter. This followed on from the session on ICD revision which formed part of the program of the ICE meeting.

James Harrison and Kirsten McKenzie provided an update of progress in drafting the Injury and External Causes sections of the 11th revision of the ICD, and the revision as a whole. The revision, managed by the WHO, has a complex process involving many groups and organisations. Topic Advisory Groups have been established to lead aspects of the work, one of which covers injury and external causes. The objectives of the revision are to bring the ICD up to date, overcome recognised gaps and deficiencies in content, improve its documentation (including definitions of terms), to prepare it to operate in an era of electronic health records and to provide versions for several purposes (until now the WHO has only published the version mainly used to code deaths). An on-line data entry and review system named iCAT has been developed for the revision.

Injury: Injury is largely covered by Chapter 19 of ICD-10. This chapter is not central to cause of death coding, because of the long-standing ICD tradition of assigning an External Cause code as the Underlying Cause of Death in cases in which injury is found to be the pathological cause of death. The injury Chapter is used most extensively for coding hospital admitted cases, and the main clinical modifications of ICD-10 and ICD-9 incorporate many expansions of the basic ICD injury classification, to accommodate clinical needs. Most categories in the chapter incorporate two conceptual dimensions: anatomical part injured, and type or nature of injury (e.g. fracture, laceration, burn). The most substantial change from ICD-9 to ICD-10 was a reversal of the order of these concepts in codes, from Nature-Anatomy to Anatomy-Nature. This change had substantial effects on comparability of time series, chiefly because ICD-9 (and, to a lesser extent ICD-10) applied the two concepts in an irregular way. No strong case has emerged to reverse the concepts again, and it is not proposed to do so. Two main types of changes are proposed. First, the main clinical modifications of ID-10 all include extensions of many of the basic ICD-10 codes (e.g. to specify which part of a bone has been fractured). The main challenge in doing this is variation in between clinical modifications in the way that this has been done. Secondly, sections of the chapter are of particular interest to particular groups. These sections include burns, poisoning, spinal cord injuries and complications of medical and surgical care. Consultation is in progress concerning changes that might be wanted. An example is that a case is being made by a burns group to alter the way that depth of burns is coded.

The External Causes chapter has long been the subject of critique by injury prevention researchers. Outcomes include some improvement of the chapter in ICD-10 (e.g. the addition of the Activity sub-classification) and in clinical modifications of ICD-9 and ICD-10 (e.g. using multiple coding rather than pre-coordination to incorporate Place and Activity). More fundamental response to the critiques is seen in alternative classifications of External Causes, particularly the ICECI, which was adopted by the WHO as a Related Classification in 2004. An extensive process, led by Kirsten McKenzie and Lois Fingerhut, has developed an approach which implements many of the enhancements exemplified by the ICECI (notably, greater regularity of concepts) while maintaining good back-compatibility. An initial and a revised discussion paper presenting this approach were released earlier in 2010. A serious constraint on progress has been the lack of decisions for the overall revision concerning aspects of structure (e.g. allowed code length). This is particularly important for the External Causes chapter because it embodies several coding dimensions, utility of which depends greatly on their placement in code strings. These 12 topics were presented to the meeting for discussion:

1. Proposal to change order of concepts in codes

2. Improvements to uniformity of code structure
3. Revise intent dimension
4. Use a separate code block to capture place of occurrence
5. Revise place of occurrence dimension
6. Separate code block for Activity
7. Revise activity dimension
8. Integrate complications of care codes
9. Integrate legal/war codes
10. Changes to transport module
11. Improve provision for maltreatment syndromes and related matters
12. Allow for additional optional dimensions

Process and timing of the revision are somewhat uncertain. Transition to a phase allowing public comment is envisaged for 2011. A more mature version will later be made available for further public input and (resources permitting) field-testing. The date foreshadowed for approval by the World Health Assembly is May 2014, for adoption sometime after that.

8. Conclusion and future directions

The Swansea Injury Forum provided an opportunity for many of the leading experts on injury statistics and measurement of the population burden of injuries to meet and discuss progress on identified injury statistics needs and collaborative working. The support of the WHO and World Bank meant that representation from lower and middle income countries was much greater than in the most recent meetings in Boston (2009) and Washington (2010). Whilst progress in many areas has been excellent, helped by an increasing amount of international collaboration and the involvement of a larger group of researchers, there is clearly much work to be done. In particular, the field needs to consider how best to respond to the following challenges laid down by Margie Peden and Kidist Bartolomeos:

- What do policy makers and program officers need to know (now, and in a few years)?
- How to work with countries to define their own priorities and systems?
- Where to invest given the IT advances and opportunities?
 - To facilitate timely data collection and dissemination
 - To provide useful/"actionable" information
- What opportunities exist for technical collaboration?
- Where do we (countries, the field) want to be in 2 years? 5 years?

There is clearly a particular need for improved burden of injury estimates for low income countries. Undoubtedly local data acts as a key stimulus to developing appropriate responses as ultimately all politics is local. There are additional requirements for improving information infrastructures and capacity development in many if not all countries. No single country has all the data needed to produce refined burden of injury estimates using comprehensive incidence and outcomes data. There is much to be learned from each other and clear needs to strengthen collaboration to help with capacity development.

Capacity in this field is very limited; obtaining funding to attend meetings like the Swansea Injury Forum is difficult to obtain, even those from high income countries. Hosting meetings in countries where the biennial world injury conferences are held helps to increase attendance and reduce the marginal costs of attendance. However, meeting every second year is insufficient to maintain the momentum generated in recent years which has proven to produce successful outcomes and progression in the methods for measuring burden of injury. There is also an identified need for some type of Injury Reference Group to work with WHO. How this could be organised and funded would need careful consideration.

These meetings confirmed the experience of previous ICE meetings: The emerging but still rather small community of researchers who focus on enabling measurement of injury at national and global level values and depends greatly on these occasional, specialised meetings, to advance the field and to spread capabilities more broadly over the world. Large general-purpose conferences, notably the series of World Conferences on Injury Prevention and Safety Promotion are valuable in their own right, but serve different purposes. Most participants in the ICE meetings also contribute to and participate in the large Conferences, but the focus there tends to be on reporting results. In contrast, the smaller and more specialised ICE meetings focus on developing expertise and capacity that enables such results to be achieved.

The Swansea meetings were associated with the London conference. Earlier injury statistics and research meetings have been held during or in association with most of the previous Conferences in that series including, most recently, those held in Mexico and South Africa. Most of these meetings have been convened by the ICE on Injury Statistics. However, the period between the Conferences is usually two or three years. This has been found to be too long an interval between the methods meetings if momentum is to be maintained. In the long period during which the US NCHS supported the ICE, a meeting was held in most years.

While other models could be workable, a plausible approach is to continue to plan for meetings in association with the World Conferences, and to aim to hold one or two other meetings between these, depending on the spacing of the Conferences. The location of the first type of meeting will, as before, be determined by the location of the Conference with which it is associated.

The location of the second type of meeting is less obviously determined. However, an argument can be advanced to hold at least some of this second type of meeting at Geneva. Holding such meets at Geneva would enable further development of the already close links with WHO-VIP and would enable development of connections with WHO more broadly. To take one example, further development and refinement of the injury aspect of the WHO Global Health Observatory might benefit from the input of the types of experts typically present at Injury ICE meetings.

Appendix A: Meetings Agendas

Program: Estimating the Burden of Injuries in Africa
Friday, 17th September 2010

Seminar Room, 1st Floor, Institute of Life Science, Swansea University,
Swansea, United Kingdom

This meeting on estimating the burden of injuries in Africa is one of a sequence of meetings related with injury measurement being held at Swansea from 17th to 20th September 2010. In particular, the GBD---Injury Expert group meeting on 18th September discusses closely related issues and methods but in a global perspective.

Aim: The purpose of this one---day meeting is to:

- Discuss progress on developing regional and country estimates of the burden of injuries.
- Discuss the technical basis for a cross-country collaboration on injury metrics. Thus, we will examine the similarities and differences in information architecture, and identify needs for common methods.
- Discuss the value of such research collaboration to all participants with the aim of identifying how the partnership may be structured differently in the future.

PROGRAM SUMMARY

- Registration (8:45am – 9:00am)
- Welcome, Introduction, and Overview (9:00am – 9:30am)
- Session 1: Architecture of data sources for measuring injuries in Africa (9:30am – 11:15am)
- Session 2: Analytical methods for common types of data sources (11:30am – 12:30pm)
- Session 3: Special focus: Mortuary data (1:30pm – 3:45pm)
- Session 4: Improving future collaboration (4:00pm –

5:00pm) Morning and afternoon refreshments and lunch

will be provided.

Acknowledgements: This project on estimating the burden of injuries in Africa is supported by a grant from the World Bank Global Road Safety Facility to Harvard University. This sequence of Africa---GBD---ICE Injury meetings at Swansea is partially supported by funding from the Violence and Injury Prevention program of the World Health Organization.

For further information: Please contact kavi_bhalla@harvard.edu

PROGRAM DETAILS

Registration (8:45am – 9:00am)

Welcome, Introduction, and Overview (9:00am – 9:30am)

SESSION 1: Architecture of data sources for measuring injuries in Africa
(9:30am – 11:15am)

In this session, we will examine the data sources inventory available from each country and discuss the similarities and differences in information architecture. In particular, we will seek to identify common types of sources (e.g. surveys, mortuary registers) and the common technical issues (e.g. handling recall biases, estimating completeness), which provide an important basis for this technical collaboration.

- Overview (Kavi Bhalla, 10 min)
- Poster viewing: Six country posters displaying country data sources and summary results: Ghana (Adofo Koranteng), Sudan (Safa Abdalla), Ethiopia (Kunuz Abdella), Nigeria (Uwom Eze), Zambia (Robert Mtonga), Mozambique (Jerry Abraham) (25 min)
- Panel presentation: Six country poster presentations (30 min)
- Panel discussion: Similarities and differences in data sources (25 min)

SESSION 2: Analytical methods for common types of data sources
(11:30am – 12:30pm)

This session will explore methods for handling some common types of data source that are unique to Africa, and on methods for triangulating to national estimates from multiple country data sources. Note that this Session will not discuss some key data sources that are covered later. Notably, mortuary data is discussed in Session 3, and surveys and hospital datasets, will be discussed in the GBD---Injury meeting on the following day (18th September).

- Overview of methods (Kavi Bhalla, 5 min)
- Estimating injury mortality from census data and HDSS data (Kavi Bhalla, 15 min)
- Estimating national burden of injuries: Sudan vs Mozambique (Safa Abdalla and Jerry Abraham, 15 min)
- Panel discussion (25 min)

SESSION 3: Special Focus: Mortuary data (1:30pm – 3:45pm)

Mortuaries, and hence mortuary records, already exist in most major urban centers in Africa. Several of us have conducted research on injury mortality patterns using mortuary data collected retrospectively or prospectively. This session focuses first on technical issues related with using mortuary data to estimate population---based injury mortality rates in the current project.

Next, we will focus on the long---term perspective. WHO recognizes the potential value of conducting injury surveillance at mortuaries and is developing guidelines that will help to systematize the process. This session will include a panel discussion that will allow researchers to provide feedback to WHO on the technical and logistical practicality of the guidelines.

- Overview of estimating injury mortality from mortuary data (Kavi Bhalla, 20 min)
- Testing completeness of mortuary data by linking with police records (Adofo Koranteng, William Ackaah, and James Damsere Derry, 20 min)
- Cross---national comparison of mortuary data (Uwom Eze, 20 min)
- Guidelines for prospective mortuary surveillance (Joan Ozanne---Smith and Kidist Bartolomeos, 20 min) followed by reactions from panel (40 min)
- Panel Discussion (15 mins)

SESSION 4: Panel Discussion: Improving future collaboration (4:00pm – 5:00pm)

Collaboration is successful when all participants make progress towards their research and policy agendas. The injury estimates produced in this project can be used to target a wide range of policy makers, including international funding agencies, national policy makers and advocacy agencies. The purpose of this session is to assess the current project in relation with the primary research and advocacy goals of the collaborators. This panel discussion will seek to identify how things should be done differently in the future.

We will discuss the potential outputs from this project and assess what purpose these serve and which should be given priority. The potential list of products from this project include:

- Regional Reports: Burden of injury reports for the four regions of Sub---Saharan Africa
- Country Reports: Selected country burden of injury reports
- Country data repositories: For example: Ghana, Uganda, Ethiopia
- Developments in methods: e.g. using mortuary surveillance, census data, HDSS site data for injuries

GBD Methods for Measuring Injury

A consultation and discussion meeting convened by the GBD Injury Expert Group

Saturday 18th September 2010

Seminar Room, 1st Floor, Institute of Life Science, Swansea University, Swansea, United Kingdom

This meeting is part of a sequence of meetings on injury statistics methods running from 17th to 20th September 2010, hosted by the Institute of Life Science, Swansea University.

Aim: This one-day meeting has been designed to provide an:

- update on the work of the GBD-Injury Expert Group and the broader GBD project
- opportunity to discuss specific aspects of the work
- opportunity to reflect on implications of this work for injury measurement and statistics more broadly

Summary Program

Registration: from 8:30 am

Welcome and Introduction (9:00am –

9:15am) Briefing on the GBD project

(9:15am – 9:30am)

Session 1: Injury mortality estimation (9:30am – Noon)
(Includes a 15 minute break at approximately 10:30am)

Session 2: Injury morbidity estimation: data (1:00pm – 2:00pm)

Session 3: Injury morbidity estimation: tools and methods (2:00pm –

Session 4: Discussion and Implications (3:45pm

5:00pm)

Acknowledgements: This meeting is partially supported by funding from the Violence and Injury Prevention program of the World Health Organization and the World Bank Global Road Safety Facility. This funding was used primarily to enable the participation of researchers from Low and Middle Income Countries. Most High Income Country participants will attend with support from their own institutions or alternate sources.

For further information: james.harrison@flinders.edu.au or kavi_bhalla@harvard.edu

Detailed Program

Session 1: Injury mortality estimation (9:30am – Noon)

More than perhaps any other Expert Group in the current GBD project, the Injury Expert Group has been involved in finding, appraising and analyzing deaths data. This has been judged necessary because of the large contribution of mortality to total injury DALYs in previous GBD projects, combined with indications of weaknesses in the mortality data likely to have been used by the GBD mortality group in the absence of involvement of the Injury group. The results of this work are likely to have relevance that extends beyond the GBD project. This session will present some aspects of the work and invite discussion.

- Overview (Kavi Bhalla)
- Global road injury mortality (Kavi Bhalla)
- Global estimation of homicide (Richard Matzopoulos)
- Quality appraisal of WHO mortality database (James Harrison)
- Mortuary data: potential for injury measurement in information poor settings (Joan Ozanne-Smith and Kidist Bartolomeos)
- Discussion

Session 2: Injury morbidity estimation: data (1:00pm – 2:00pm)

Finding data for the GBD project was expected to be challenging. That has been confirmed in practice. What has been found confirms early expectations in some respects and not in others. Presentations in this session will describe what has been obtained.

- Overview (James Harrison)
- Reviews of published literature (James Harrison & Claire Bryan Hancock)
- Hospital inpatient data (Saeid Shahrzaz)
- Population survey data (Saeid Shahrzaz)

Session 3: Injury morbidity estimation: tools and methods (2:00pm – 3:30pm)

Combining the (often patchy and unreliable) data to make estimates of injury burden is as challenging as finding data. In this session analytic approaches that are being used or developed will be presented, and discussion will be invited. This is work-in-progress.

- Overview (Kavi Bhalla)
- GBD weights: progress report (James Harrison)
- DISMOD 3: What is it and how is it being used for injury estimation (Saeid Shahrzad & Claire Bryan Hancock)
 - o Example: Using DISMOD to combine data on TBI from data from literature, surveys and hospital data collections
- The UK Burden of Injury Study (Ronan Lyons & Belinda Gabbe)
- Combining morbidity data to make population estimates (Kavi Bhalla)
- Discussion

Session 4: Discussion and Implications (3:45pm – 5:00pm)

Early in the life of the GBD Injury Expert Group a number of topics were raised by members as having implications for GBD work. In some instances, these were a special case of an issue with relevance to injury statistics and measurement more broadly (e.g. case definition; severity). Others were more specific to the GBD project (e.g. the revision of reporting categories). Members of the group expressed interest in leading work on particular topics, and preparation of papers was foreshadowed. Progress has varied between topics. This session provides an opportunity to revisit the topics, reflect on progress and discuss implications for future work, in the context of the presentations and discussion in the earlier sessions of this meeting. .

- Summary of topics and overview of activities to date (James Harrison)
- Where to from here? (open discussion)
 - o Publishing findings
 - o Publishing methods
 - o Making data more accessible
 - o Advocating change (e.g. to ICD, data collections)
 - o Study questions arising from this work
 - o Other ...

International Collaborative Effort on Injury Statistics (ICE) meeting

September 19-20th, 2010

Seminar Room, 1st Floor, Institute of Life Science, Swansea University,
Swansea, United Kingdom

Sunday, 19th September (8:30 am -3:30 pm)

8.30 AM Welcome and Introduction - Margaret Warner

8.45 AM Non Fatal Injury Indicators (NFIs) - Colin Cryer

What are the pros and con's of different approaches to measuring non fatal injury?

1) A 'basket' of ICD diagnoses, facilitated by Colin Cryer

a) Minimising health service effects in international comparisons - Colin Cryer

b) Five country (Wales, Scotland, England, Northern Ireland, Republic of Ireland) analysis of inpatient injury admissions - Steven Macey

c) International comparisons in the presence of different versions of ICD - Margaret Warner

d) Serious non-fatal injury: are we missing a material number of cases? - Pauline Gulliver

e) Global childhood unintentional injury surveillance in four cities in developing countries: how to measure injury severity and why? - Hesham El-Sayed

10.00 AM WHO VIP update - Margie Peden

10.30 AM Coffee Break

11.00 AM Non Fatal Injury Outcomes (NFIOs), facilitated by Belinda Gabbe

How do we take the work of several groups in measuring non fatal outcomes (disability and function) and come to a decision on an internationally accepted approach?

1) Measuring the population burden of injuries: implications for global and national estimates from the UK Burden of Injuries (UKBOI) Study- Ronan Lyons

2) INTEGRIS Project - Juanita Haagsma

3) Impact of ICF - participation and culture - Shanthi Ameratunga

4) Meta-analysis of global EQ-5D data - James Black

12.00 PM Working lunch

1.00 PM Updates on other international projects

1) North –South Collaboration, facilitated by Diego Zavala

2) Brief ICD-11 Update (main meeting on Monday) - James Harrison

3) Quality of external cause of injury data given ICD-11's approach - Kirsten McKenzie

4) Global Health Observatory – a home for indicators? - Kidist Bartolomeos

3.20 PM Organize workgroups for Monday – Margaret Warner

3:30 PM Close for the Day

4:00 PM Meet for sightseeing trip (optional)

Monday, 20th September (ICE meeting 8:30 am -12:30 pm,)

8.30 AM Small group meetings

1. Non fatal injury indicators work (1 or 2 groups) facilitated by Colin Cryer and Rolf Gedeberg
2. Non fatal injury outcomes work facilitated by Belinda Gabbe and Ronan Lyons

10.30 AM Coffee Break

11.00 AM Report back and discussion

12.00 PM Next Steps, facilitated by Margaret Warner

12.30 PM ICE Meeting adjourned

ICD11 Injury and External Causes Topic Advisory Group Meeting

September 20th, 2010

Seminar Room, 1st Floor, Institute of Life Science, Swansea University,
Swansea, United Kingdom

1.30 PM Introduction and aims

3.45 – 4.00 Coffee break

4.00 - 5.00 Discussion

5.00 PM Meeting closes

Appendix B: Attendees at the Swansea Injury Forum

LIST OF ATTENDEES		
Name	E-mail address	Country
Ackaah Williams	ackaahwillie@yahoo.com	Ghana
Adnan Hyder	ahyder@jhsph.edu	USA
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