THE WHO GLOBAL BURN REGISTRY—
THE WORLD’S FIRST STANDARDIZED
PLATFORM FOR DATA COLLECTION ON BURNS
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Arizona Burn Center, Phoenix, Arizona
Territories are sized in proportion to the absolute number of people who died from fires in one year.
Territory size shows the proportion of the world population living in poverty residing there.
Burden of Burns by Country Income Level

Population
- High
- Upper Middle
- Lower Middle
- Low

Burn deaths
- High
- Upper Middle
- Lower Middle
- Low

DALYs
- High
- Upper Middle
- Lower Middle
- Low
The Best Treatment for Burns...

The challenge of burns lies not in the successful treatment of a 100% burn, but in the 100% prevention of all burn injuries.

Dr. M.H. Keswani, leader of burn care in India
Who is at risk?
Burn Injuries and Epidemiologic Data

Majority of existing data based on single institution retrospective chart reviews

Few multi-center or population-based studies

Few community surveys

Need for representative data for risk factor identification and public health interventions
The true incidence of burn deaths in India...

...is probably 6 x current estimates!
Design and evaluation of a system for improved surveillance and prevention programs in resource-limited settings using a hospital-based burn injury questionnaire

MICHAEL PECK, ISBI
DAVID MEDDINGS, WHO
SUMI MEHTA, GACC

HENRY FALK, CDC
DAVID SUGERMAN, CDC
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The World Health Organization and a global network of epidemiologists and burn care practitioners have developed and piloted a new system for gathering burn-related data, which can be expected to be used in either resource-abundant or resource-limited settings.

This system’s data collection instrument (form) had three functions:

• to characterize the main risk factors and mechanisms for burns requiring inpatient care
• to characterize the main risk groups for burns requiring inpatient care
• be designed for use without modification and around the world

After pilot testing, this form was shown to be simple, flexible, and acceptable to users.
Background

Collaborative effort involving the World Health Organization, the Global Alliance for Clean Cookstoves (GACC), the U.S. Centers for Disease Control and Prevention, and the International Society for Burn Injuries was undertaken to simplify and standardize inpatient burn data collection.

An expert panel of epidemiologists and burn care practitioners advised on the development of a new Global Burn Registry (GBR) form and online data entry system that can be expected to be used in resource-abundant or resource-limited settings.
Global Alliance for Clean Cookstoves
Working Group

Rajeev Ahuja (India)     Michael Peck (chair; US)
Alberto Bolgiani (Argentina)     Tom Potokar (UK)
Shobha Chamania (India)     David Sugerman (US)
Scott Corlew (US)     Dehran Swart (South Africa)
Gopalakrishnam Gururaj (India)     Ashley van Niekerk (South Africa)
Leila Kasra (Canada)     Brigitte Vilasco (Côte d’Ivoire)
Asad Latif (US)     Hilary Wallace (Australia)
Saidur Mashreky (Bangladesh)     Shahla Yekta (Canada)
Amr Moghazy (Egypt)
Goals

Inclusion of core minimum data set (MDS) proposed in the WHO/CDC Injury Surveillance Guidelines

Long-term sustainability and suitability for resource-limited settings (RLS)

Standardization of data collection and analysis by ensuring the ability to collate and work with data across all settings, especially RLS, with non-ambiguous case definitions and instructions for use

Guidance and training
Proviso

Project was developed to provide a clearer characterization of the impact of burns and the circumstances in which burns are sustained so that there could be better targeting of primary prevention strategies, advocacy, and identification of long-term socioeconomic effects.

Intent was to ensure application in RLS, but not exclusive to RLS.
Methods

DataCol used as electronic platform for data entry

International burn organizations, CDC, and WHO solicited burn center participation to pilot test the GBR system.

Participants included 52 hospitals from 30 countries

- 5 HIC
- 7 HMIC
- 13 LMIC
- 5 LIC
Global Burn Registry Data Collection Form

1. Indicate the respondent (person providing the information) and fill out all relevant boxes providing information about the patient.

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Patient's date of birth:</th>
<th>If date of birth unknown:</th>
<th>If under 5 years of age was the patient:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient</td>
<td>_________________________</td>
<td>________________________</td>
<td>A/E: [ ] With other children: [ ] (less than 5 years old)</td>
</tr>
<tr>
<td>Husband</td>
<td>_________________________</td>
<td>________________________</td>
<td>A/E: [ ] With an adult but unsupervised: [ ]</td>
</tr>
<tr>
<td>Wife</td>
<td>_________________________</td>
<td>________________________</td>
<td>Male: [ ]</td>
</tr>
<tr>
<td>Parent</td>
<td>_________________________</td>
<td>________________________</td>
<td>Female: [ ]</td>
</tr>
<tr>
<td>Sibling</td>
<td>_________________________</td>
<td>________________________</td>
<td>Male: [ ]</td>
</tr>
<tr>
<td>Other</td>
<td>_________________________</td>
<td>________________________</td>
<td>Female: [ ]</td>
</tr>
</tbody>
</table>

Age in years (rounded to the nearest year): [ ]

(Use dd/mm/yyyy format)

Sex: Male [ ] Female [ ]

Date of admission: ________________________

Hour of day admission: ________________________

(Use 24 hour clock—e.g. 15h not 3 p.m.)

2. Fill out all relevant boxes indicating general and clinical information about the burn.

<table>
<thead>
<tr>
<th>Date burn occurred:</th>
<th>Hour of day burn occurred:</th>
<th>Village, neighbourhood or postal code where burn occurred:</th>
<th>Total body surface area of burn (refer to body surface area diagrams)</th>
</tr>
</thead>
<tbody>
<tr>
<td>____________________</td>
<td>___________________________</td>
<td>___________________________</td>
<td>________________________</td>
</tr>
</tbody>
</table>

(Use dd/mm/yyyy format)

(To nearest 5 % e.g. 3%, 5%, 15%, etc.)

Associated smoke inhalation injury: Yes [ ] No [ ]

Associated injuries (check all that apply): Abdominal trauma [ ] Spinal cord injury [ ]

Ataxia [ ] Traumatic brain injury [ ]

3. Fill out all relevant boxes indicating the anatomy of the burn (check all that apply).

<table>
<thead>
<tr>
<th>Head and neck</th>
<th>Arms</th>
<th>Trunk</th>
<th>Hands and wrists</th>
<th>Legs</th>
</tr>
</thead>
<tbody>
<tr>
<td>None [ ]</td>
<td>None [ ]</td>
<td>None [ ]</td>
<td>None [ ]</td>
<td>None [ ]</td>
</tr>
<tr>
<td>Scalp [ ]</td>
<td>Chest, abdomen, back or buttocks [ ]</td>
<td>Shoulder and/or scapula [ ]</td>
<td>Wrist [ ]</td>
<td>Thigh and/or lower leg [ ]</td>
</tr>
<tr>
<td>Face [ ]</td>
<td>Perineum or genitalia [ ]</td>
<td>Upper arm and/or forearm [ ]</td>
<td>Back of hand [ ]</td>
<td>Knee [ ]</td>
</tr>
<tr>
<td>Eye [ ]</td>
<td>Elbow [ ]</td>
<td>Elbow [ ]</td>
<td>Palm [ ]</td>
<td>Ankle [ ]</td>
</tr>
<tr>
<td>Neck [ ]</td>
<td></td>
<td></td>
<td>Fingers and/or thumb [ ]</td>
<td>Foot [ ]</td>
</tr>
</tbody>
</table>

4. Tick the appropriate box in the top row indicating how the burn was caused and then fill out the appropriate column below.

<table>
<thead>
<tr>
<th>Flame [ ]</th>
<th>Hot surface [ ] Related to (select one best response from below):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hot liquid, steam or gas [ ] Refusal to (select best response from below):</td>
</tr>
<tr>
<td>Household [ ]</td>
<td>Occupational [ ] Related to (select one best response from below):</td>
</tr>
<tr>
<td>Household heating [ ]</td>
<td>Household lighting [ ] Related to (select one best response from below):</td>
</tr>
<tr>
<td>Household appliance [ ]</td>
<td>Household washing [ ] Related to:</td>
</tr>
<tr>
<td>Household lighting [ ]</td>
<td>Occupational activity [ ] Friction [ ]</td>
</tr>
<tr>
<td>Public [ ]</td>
<td>Other [ ] Chemical [ ] Cooling [ ] Radiation [ ] Other [ ]</td>
</tr>
<tr>
<td>Public [ ]</td>
<td>Public [ ] Electrical [ ] Friction [ ] Cooling [ ] Radiation [ ] Other [ ]</td>
</tr>
</tbody>
</table>

| Cooking [ ] | Road traffic crash [ ] |
| Heating [ ] | fires [ ] |
| Lighting [ ] | Fires [ ] |
| House fire (single) [ ] | Fires [ ] |
| Home fire (multiple) [ ] | Fires [ ] |
| Intentional burn [ ] | Fires [ ] |
| Playing with fire [ ] | Fires [ ] |
| Other [ ] | Fires [ ] |

| High voltage [ ] |
| Low voltage [ ] |
| <=1,000 volts [ ] |
| Lightning [ ] |
| Other [ ] |
5. For burns involving either cooking/food preparation, household lighting, or household heating fill out all relevant boxes. For other burns, skip to question 6.

<table>
<thead>
<tr>
<th>Cooking/food preparation</th>
<th>Household lighting</th>
<th>Household heating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burn caused by contact with</td>
<td>Burn involved</td>
<td>Burn caused by</td>
</tr>
<tr>
<td>Cook stove □</td>
<td>Deliberate movement (e.g. deliberate touch) □</td>
<td>Lamps/lamps igniting surrounding material □</td>
</tr>
<tr>
<td>Cooking tool/vessel (pot, etc.) □</td>
<td>Explosions □</td>
<td>Accidental movement touching lamp □</td>
</tr>
<tr>
<td>Burning fuel (wood, kerosene etc.) □</td>
<td>Accidental movement (e.g. fall/spill etc.) □</td>
<td>Accidental movement touching lamp □</td>
</tr>
<tr>
<td>Cooked food or liquid □</td>
<td>Fire in cooking area □</td>
<td>Accidental movement touching lamp □</td>
</tr>
<tr>
<td>Other □</td>
<td>Other □</td>
<td>Other □</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Details of cooking area</th>
<th>Fuel used for cooking</th>
<th>Type of lamp/lamps</th>
<th>Energy source for heating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooking area might be ground □</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Under 0.9 m (3 feet) □</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>0.9 m (3 feet) or higher □</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Unknown □</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

| Cooking and lighting areas separate? | | |
|-------------------------------------| | |
| Yes □ | | |
| No □ | | |
| Unknown □ | | |

6. Burn caused intentionally? Intentional self-harm □ Assault □ Unintentional □ Undetermined intent □

7. If the patient is 15 years or older, is the patient literate? Yes □ No □ Unknown □

8. Contributing factors: None □ Alcohol □ Drug □ Epilepsy □ Dementia □ Psychiatric illness □ Physical or mental disability □ Other □

9. Number of people burned in this incident: 1 person □ 2 people □ 3-5 people □ 6-9 people □ 10 and more people □

10. Indicate the patient's treatment and discharge.

<table>
<thead>
<tr>
<th>Surgery during this hospital stay?</th>
<th>Date of discharge</th>
<th>Hour of day patient discharged</th>
<th>Condition on discharge from facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes □</td>
<td></td>
<td></td>
<td>Dead □ Discharged home with disability □</td>
</tr>
<tr>
<td>No □</td>
<td></td>
<td></td>
<td>Transferred to another facility □ Discharged home without disability □</td>
</tr>
</tbody>
</table>

(Use dd/mm/yyyy format) (Use 24 hour clock – e.g. 11th not 3 p.m.)
Results

- During an 8-month period, 52 hospitals in 30 countries enrolled in the pilot and were provided the GBR instrument, guidance, and a data visualization tool.
- Evaluations were received from 29 hospitals (56%).
- Key findings:
  - Median time to upload completed forms was less than 10 minutes
  - Physicians most commonly entered data (64%), followed by nurses (25%)
  - Layout, clarity, accuracy, and relevance were all rated high
  - Vast majority (85%) considered the GBR “highly valuable” for prioritizing, developing, and monitoring burn prevention programs
Conclusions

- The GBR was shown to be simple, adaptable, and acceptable to users.
- Both in terms of structure and ease of operation, this data collection system was straightforward, allowing first-time users access with minimal training.
- Although not pilot-tested over a long time period, this system demonstrates flexibility, supporting the modification of questions and paper based collection in countries unwilling to send data to WHO via the Internet.
- The system is timely, with data immediately available to facilities, automatically updated and re-tabulated.
- Finally, the system demonstrated high stability without corruption, hacking, or downtime for maintenance.
Launch of the Global Burn Registry

- After revisions based on feedback from the pilot study, the GBR in its current form was launched on January 18, 2018.
- Data is collected in a short, paper form:
  - Responses are simple checkboxes
  - Available in English, French or Spanish
  - Accompanied by user’s manual (question-by-question instructions)
- Collected by clinical staff during hospitalization
Why Should Hospitals Participate?

- Collaborate in a global initiative lead by the WHO to reduce burn injuries
- Provides a clear picture of burn risk factors in your setting
- Data can be analyzed locally, and compared globally
What Does GBR Registration Process Involve?

- Contact GBR by email at gbr@who.int
- Three steps:
  - Register hospital or facility
  - Complete paper form for each patient
  - Upload forms on-line to GBR in Geneva
- Website is http://www.who.int/violence_injury_prevention/burns/gbr
Global Burn Registry
Preliminary Data
Pre-Hospital Transport Time

![Bar chart showing percentage of pre-hospital transport duration hours](chart.png)

- **0-2 hours**: 10%
- **11-23 hours**: 17%
- **3-6 hours**: 15%
- **7-10 hours**: 13%
- **>24 hours**: 45%
Cause of Burns

- Flame: 82.5%
- Hot liquid, steam or gas: 30.5%
- Electrical: 16%
- Chemical: 2.5%
- Hot surface: 1%
- Other: 1.5%
Cooking Related Burns—Fuel Used

- Charcoal: 1%
- Electricity: 1%
- Ethanol: 2%
- Kerosene (paraffin): 15%
- Liquefied Petroleum Gas (LPG): 19%
- Natural gas: 45%
- Wood: 16%
Demographics—Sex

![Bar chart showing the percentage of female and male individuals.]

- Female: 43%
- Male: 57%
What is the WHO’s aim?

Identify burns risk factors

Clarify main burn risk factors and risk groups

Conduct Assessments

Enable international, regional and national assessments

Burns prevention programming

Enable targeted burn prevention programming
How can my hospital participate?

Register to participate either via:

- **Email:** gbr@who.int
- **GBR website:** [www.who.int/violence_injury_prevention/burns/gbr](http://www.who.int/violence_injury_prevention/burns/gbr)