IGATES Handbook

International Globe and Adnexal Trauma Epidemiology Study (IGATES)

Study Handbook Version 1.0: 5th August 2017

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Signed authority to participate in the study and abide by the agreed conditions.

Site number:……

Site co-ordinator:……

Country co-ordinator:……

1.1 Why IGATES?

Traumatic eye and facial injuries encompass a significant proportion of all patients presenting to emergency departments[1]. Ocular trauma is associated with considerable morbidity and healthcare-associated costs[2,3]. The ability to predict and anticipate outcomes in patients with ocular trauma is critical to developing eye injury prevention strategies and appropriate treatment plans, as well as to advise and counsel patients.

The Birmingham Eye Trauma Terminology System (BETTS) and Ocular Trauma Score (OTS) have been widely adopted internationally since they were published and remain the benchmark for classification of ocular trauma. Whilst the current OTS has significantly contributed in reducing the ambiguity about classification and assisted the prediction of outcomes for most open globe trauma, there remain some limitations and controversies.

This includes the exclusion of adnexal injuries from the score. Further examples include whether the significance accorded to presenting VA is justifiable, and whether RAPD is an absolute biomarker for the patient's final visual outcome. First developed in early nineties, it is not known if BETTS and OTS accurately reflect current state of art trauma practice and outcome. In clinical practice, the BETTS and OTS classifications can be difficult as not all data is collected. We aim to build on the valuable aspects of the existing BETTS and OTS to build a more robust model incorporating a wider range of relevant markers relating to the outcome.

The primary aim of the International Globe and Adnexal Trauma Epidemiology Study (IGATES) is to use cloud computing and big data analytics to develop a prognostic classification system for ocular trauma through international collaboration. This score will serve to develop strategies to prevent ocular trauma and mitigate its consequences.

Specifically we will aim to;

i) Identify the factors affecting the outcome of open globe and adnexal injury (ocular trauma)
ii) Develop a prognostic classification system for ocular trauma
iii) Conduct a large multicentre retrospective review of ophthalmic trauma utilising the revised "Ophthalmic Trauma Score" (OTS2)

[1] Yadav K, Cowan E, Wall S, Gennis P. Orbital fracture clinical decision rule development: burden of disease and use of a mandatory electronic survey instrument. Acad Emerg Med 18:313-316, 2011.
[2] Ko MJ, Morris CK, Kim JW, et al. Orbital fractures: national inpatient trends and complications. Ophthal Plast Reconstr Surg 29:298-303, 2013.
[3] Beshay N, Keay L, Watson SL, et al. The epidemiology of Open Globe Injuries presenting to a tertiary referral eye hospital in Australia. Injury; 2017. 48(7);1348-54.

1.2 IGATES-1 and IGATES-2

The IGATES study will have two distinct phases in the study of patients with globe and adnexal trauma. IGATES-1 a retrospective cohort study and IGATES-2 a prospective study. IGATES-1 will commence in July 2017 with data collection undertaken over a 6 month period of patients presenting with ocular trauma between 2006-2015 at participating centers. Data analysis will be conducted in the following 6 months, with findings used to design the key elements for study and a clinical risk score for validation in the prospective study IGATES-2. IGATES-2 is anticipated to commence in June 2018 with data collection continuing for a 5 year period from commencement.

The primary outcomes measures for BETTS were the final visual outcome and anatomical outcome. We also study the incidence of ocular complications related to ocular trauma, the significance of eyelid and/or adnexal trauma, and extra-ocular complications such as intracranial injury. Potential risk factors for outcomes will also be assessed.

This study will provide extensive data relating to the factors affecting the outcome of open globe injury and repair. The study is also anticipated to provide the largest data set of outcomes from globe and adnexal trauma to date.

1.3 Key Collaborating Organisations

The IGATES study is supported by the Asia Pacific Ocular Trauma Society (APOTS), International Society of Ocular Trauma (ISOT), Collaborative Ocular Tuberculosis Study group (COTS), Ocular Trauma Society of India (OTSI), and American Society of Ocular Trauma (ASOT).

2.0 Participating Centres

See Annexure A.

2.1 Acknowledgement of the study protocol and authorship

All participating centres will read and review the handbook acknowledging the terms of participation including data access and storage and authorship.

Any questions relating to the terms shall be addressed to Professor Agrawal.

3.0 Steering Committee

3.1 Study Mentors:

Professor Ferenc Kuhn, USA

Professor Hua Yan, China

Professor S Natarajan, India

Professor Michael Grant, USA

3.2 Principal Investigators (PI):

A/Prof Rupesh Agrawal, Singapore

Ms Annette Hoskin, Australia

A/Prof Gangadhara Sundar, Singapore

A/Prof Fasika Woretta, United States

Dr Andrés Rousselot, Argentina

Professor Stephanie Watson, Australia

3.3 Web platform and Big-data protocol administrator:

Dr. Dinesh Visva Gunasekeran, Singapore

3.4 Country Representatives

Southern India- Dr Kim, Dr Parveen, Dr Chaitra Jayadev, Dr R Kim

Northern India- Dr Shakeen Singh

Central India- Professor Rekha Khandelwal

East India – Dr Kasturi Bhatacharjee

West India – Dr Mehul Shah, Dr S Natarajan

Singapore- Dr Victor Koh, Prof Ganga

Australia- Dr Stephanie Watson, Ms Annette Hoskin

China – Prof Hua Yan

USA – Prof Fasika Woretta

Malaysia – Dr Ain

Hong Kong – Dr Kendrick

Canada – Dr Kashif Baig

UK - Dr Felippe

Nepal – Dr Eli Pradhan

4.0 Institutional Review Board Approvals

The IGATES protocol requires all participating sites to obtain approval from their local Institute review boards (IRB) prior to data collection. Where the IRB dictates that ethical clearance is not required for retrospective data entry, a letter has to be obtained from the local IRB and provided to the IGATES team for record keeping before starting data entry.

4.1 Institutional Review and Ethics Approval

It is required that the ethics approval include the same title for all centres and contain the IGATES web-based data aggregation platform link. Each site shall provide a final copy of the ethics approval to A/Prof. Rupesh Agrawal before starting data entry.

4.2 Confidentiality of Participant Data

The data for all the patients entered on the web-based data aggregation platform shall be maintained in accordance with legal regulations and all agreements made with the relevant IRB by the site PI. No patient identifiers should be entered in the online web database. Each recruited patient will have a coded **participant registration number**. A hard copy site-based registry of recruited patients and corresponding participant registration numbers is to be maintained by the site PI, whereby only the site PI has access to this list of patient identifiers.

The coding for recruited patients is AAA-BBBBB whereby “AAA” is the site ID assigned to the site for the IGATES study, and “BBBBB” is the last 5 characters of the patient’s passport/ national identification number. This ensures that the Site PI is able to trace back any recruited patient based on their **participant registration number** in the event that any clarifications are sought by the statistical analysis team, with regards to data that was entered. For patients without passport/national identification documents, please generate a registration number, perhaps AAA-00001 onwards (AAA being site ID), and then annotating this accordingly in the patient's file according to hospital procedure - for instance "This patient has been recruited for the IGATES study and has a **patient registration number** of AAA-00001". This is to avoid duplicate entries for a given patient, and to facilitate data review should uncertainties, missing data, or errors be identified.

Sensitive health information such as HIV status must not be entered into the web platform, unless an exemption is granted by the governing IRB. All this anonymised data of recruited patients will be kept in a password-protected web-based medium. Study excel sheets are to be kept in a password protected computer. Computers and backup files containing data will be kept in secure site-based locations. After the data entry is complete, the IGATES data entry portal will be closed.

5.0 Authorship Policy:

The authorship style for all papers will be the Modified Conventional style (named authors "for" the study group, e.g. Jones, Smith and Johnson, "for the International Globe and Adnexal Trauma Epidemiology Study"). The entire study group (defined as IGATES group involved in data collection and analysis) will be acknowledged in primary papers. The steering committee will maintain a credit roster updated periodically for this purpose.

5.1 Primary Manuscripts

Primary manuscripts (primary reports of the epidemiology, clinical features, mortality, incidence of complications, and outcomes) will have all the IGATES participating members listed as contributing authors under the IGATES group as per ICMJE guidelines.

The Steering Committee members will be the named authors in the manuscripts. Annette Hoskin and/ or Dr. Dinesh Visva Gunasekeran will be the default first authors and A/Prof. Rupesh Agrawal will be the lead corresponding author. Depending on the contribution from the members of the IGATES group to data collection, data analysis and/or manuscript preparation, members will be added as named authors to manuscripts, subject to target journals' authorship criteria and instructions. Contributing study team members not included in a named manuscript will be acknowledged in the manuscript as members of the IGATES group. The names of all the participating centres will also be acknowledged in primary manuscripts.

Any participating centre can approach the Steering Committee to lead the authorship of any additional proposed manuscript utilising the complete database. The biostatistician(s) conducting the analysis will also be included as a co-author. Other co-authors may be included following approval by the Steering Committee.

5.2 Secondary Manuscripts

Other ("secondary") manuscripts can be initiated by any center. There are no limitations on who may serve as first author for a secondary manuscript (e.g. a core investigator, a fellow, a resident, another faculty member). Non-primary manuscripts must be proposed and approved by the study Steering Committee. It is anticipated that approval typically will be granted, but that going through the approval process will avoid duplication of effort, will facilitate allocation of (limited) central resources (e.g. biostatistician support) to individual projects, and may improve the quality of the proposed design of the analysis to be

conducted. After approval to write a manuscript is obtained, the manuscript must be submitted within twelve months, or approval to write the manuscript may be revoked, at the discretion of the Steering Committee.

Named authors will include: the primary writer of the manuscript (first author), the statistician conducting the analysis for the paper (if applicable), the lead PI of the participating centre (corresponding author), the Steering Committee and the IGATES study group (as per ICMJE guidelines). Additional authors may be named with approval of the Steering Committee when appropriate. Unless agreed otherwise, the "senior author" (listed last in the named authors list) will be the person who takes on primary responsibility for assuring the quality and completion of the project. Usually this person will be the sponsor, but another could fulfil this role when appropriate. The specific authorship plan will be proposed at the time of proposal of the manuscript by the first author, based on the anticipated extent of contribution of each author to the manuscript, and is subject to approval by the Steering Committee based on the guidelines above. At the time the manuscript is circulated for final approval, co-authors will have two weeks to respond with their suggestions and sign-off authorship documents. Those who do not respond will be omitted from authorship for that manuscript and acknowledged as contributors.

Note: the study imposes no restriction upon a centre's reporting of its own data. Each center may conduct chart review studies in the same manner as if they were not participating in the IGATES project. Any site may request data contributed from the site to the IGATES platform to be provided back to the centre for the study team to report its own data. Data will be returned in excel format within 2 weeks of receipt of this email request.

5.3 Meeting Presentation Policy:

Abstracts must be circulated at least 2 weeks ahead of submission so that co-authors have an opportunity to comment before submission. Co-authors may either return comments or may indicate approval of the submission by not returning comments. Abstracts should not be submitted unless the following requirements are met: 1) Final tables and figures are completed; 2) Draft manuscript is completed (outlined Discussion is acceptable)

Conference presentation authorship policy: Some conferences may restrict the number of authors credited in conference abstracts. If so, author names may be omitted in the abstract and instead acknowledged as members of the IGATES group in order to meet the guidelines and instructions of the conference. However, all authors must be acknowledged in the talk or poster as members of the IGATES group and contributing authors to the study.

Note: Consult the study PI regarding authorship order prior to circulating abstracts.

6.0 Data Entry

6.1 IGATES 1

To enter data in IGATES-1, select a chart from January 2006 till December 2015 (or a portion of this period), and confirm that the patient described in the chart is eligible for the study.

6.1.1 IGATES-1 Exclusion and inclusion criteria

Inclusion criteria: Serious ocular trauma—defined as 'an injury or wound to the eye or adnexa caused by external force or violence, which may requires admission to hospital (however not limited to only admission) for observation or treatment'.

A patient is potentially ELIGIBLE for the IGATES 1 study if (s) he has of any of the following diagnoses:

- X Open globe injury (with or without adnexal or orbital involvement)
- X IOFB

All patients with accidental or non-accidental eye (globe and/or adnexal) injuries resulting in the above diagnosis are to be included.

It is anticipated that patients will be recruited through emergency departments, outpatient clinics and from in patient referrals.

Exclusion Criteria:

A patient is INELIGIBLE for the IGATES-1 study if (s)he:

- X Absence of open globe injury

Questions about eligibility should be reviewed with your center PI or can be directed to A/Prof. Rupesh Agrawal or Ms. Annette Hoskin.

NOTE: A chart that has been entered should be "marked" in some way that is not objectionable and is HIPAA compliant, to avoid duplicate entries. The site PI is responsible for ensuring that there are no duplicate entries of individual patients.

6.2 IGATES 2

IGATES-2 will be prospective arm of IGATES. Selective centres who will be participating actively for IGATES-1 will be identified for IGATES-2. In IGATES-2, patients will be recruited from the commencement of the study for a period (tentative January 2018) of 5 years. Patients to be included in IGATES-2 will include all patients that meet the inclusion criteria. Patients/visits after that time should be recorded. There will be ocular schematics form to facilitate clinical details in the form in non-ambigous way. IGATES team is building up the ocular schematics based registry.

6.2.1 IGATES-2 Exclusion and inclusion criteria and classification of Major or Minor Trauma

Patients will be classified as having minor or major trauma depending on the whether it is potentially vision threatening. All the patients with history of ocular injury (mechanical or non-mechanical) will be included. This will include open globe or closed globe injury or lid or adnexal trauma without globe injury can be included in IGATES 2.

Minor trauma cases will be defined as patients presenting with VA better than 6/18 with and of the following:

1. Corneal foreign body
2. Corneal abrasion
3. Lamellar corneal laceration
4. Subconjunctival haemorrhage
5. Traumatic iritis or micro-hyphema
6. Berlin's oedema (retinal commotion)
7. Simple Lid laceration (including margin involvement)
8. Any form of minor trauma not involving surgery

Major trauma cases will be defined as patients with any of the following:

1. Open globe injury
2. Closed globe injury including hyphema (excl micro), iridodialysis, angle recession (with or w/o glaucoma), cyclodialysis cleft, hypotony or elevated pressure, traumatic cataract, vitreous haemorrhage, macular hole, choroidal rupture (with or w/o CNVM), orbital fractures, complex lid lacerations (involving canaliculus), traumatic optic neuropathy, cranial nerve palsy requiring intervention
   VA 6/18 or less secondary to trauma
   Hospitalisation secondary to eye injury
   NB Minor traumas requiring surgical interventions as a result of a further complication can then be re-classified to major trauma.

Population of the IGATES-2 study form (short or long) will be based on the classification of major or minor trauma. Irrespective of whether a case is major or minor trauma the patient can be included in either the short or longer form. Data will be presented at time of presentation and at all follow up appointments.

Questions about eligibility should be reviewed with your center PI or can be directly enquired from Dr Rupesh Agrawal or Annette Hoskin.

NOTE: In most cases, a chart that has been entered should be "marked" in some way that is not objectionable and is HIPAA compliant, to avoid wasting time re-reviewing charts that already have been entered.

The IGATES study will be enrolled with clinicaltrials.gov.

6.3 The IGATES Data System

The IGATES data system will be the main repository of data at each site. Each site will use the electronic form for data entry created specifically for this study. The central database in Microsoft excel form will be on the cloud server of cognito platform and can be accessed by Prof Rupesh Agrawal and the steering committee .

A password, given to each centre, is required to open the IGATES database. If there are problems opening the database, the following persons may be contacted (in order):

Dr. Dinesh Gunasekeran

E-mail: dineshvg@hotmail.sg

Ms. Annette Hoskin

E-mail: annettehoskin@yahoo.com.au

A/Prof Rupesh Agrawal

E-mail: Rupesh_agrawal@ttsh.com.sg

(A new link be provided for IGATES 2 will be provided for selected centre for IGATES)

6.4 Data Entry

The DATA ENTRY section involves an online web-based data aggregation platform. Patient identity will be kept confidential, and personal information will not be entered into the online database. The data from every site will be stored at a single secure server, and different sites shall not be able to access each other's data sheets until the end of the study. A chart that has been entered should be "marked" in a manner that is HIPAA compliant, to avoid duplication of chart reviews.

IGATES patients will be identified by the Country Code, Site ID and coded Patient ID. Site ID is unique to each participating hospital and will correspond the country and hospital the patient was reviewed at for the Initial Presentation. The coded Patient ID will be taken as the last 5 characters of the patients' National Identification number. For example, a patient with Identification number of "S9230202C," will have a IGATES Patient ID of "0202C". Please direct any uncertainties regarding this to Annette Hoskin, she can be contacted via email at annettehoskin@yahoo.com.au.

IGATES-1 web-based data aggregation platform:

https://www.cognitoforms.com/Eye11/IGATES1

6.4.2 Entering Data from Medical Records

IMPORTANT: Before entering data on a patient at initial presentation, please confirm that the patient is eligible for this study, based on the inclusion and exclusion criteria detailed above.

General Rules for Entering Data from Chart Reviews:

Procedure for Data entry:

You will find that the online IGATES form is intuitive and user friendly.

Please enter information according to the questions presented to you by the form, which are self-explanatory. If information necessary to answer a prompted question is not available to you, please select "Unknown".

The IGATES form is comprehensive to provide the necessary data for high quality publications. It has been programmed as a smart form and tested in several rounds of trial runs to minimize unnecessary data entry. As such it has been optimized to change the questions presented to the user based on his replies to earlier questions. A basic example: if for "Laterality – Eye Involvement" you select "OD (Right eye)", you will not be prompted to enter data for the OS (Left eye). If you select "Both eyes", you will be prompted to enter clinical data for both eyes.

Please bear in mind that once a form is submitted, the data will be saved in a remote and secure location, and cannot be re-accessed for edits. As such please "Save" in any situation of uncertain or incomplete data entry. The next section highlights procedure for any data entry errors/changes.

The form allows you to save progress and resume data entry later. Simply click the "Save" button at the bottom of the current page to do so. You will be prompted to enter an email, to which a unique link to resume the current form will be sent. Please check the Site ID and Patient ID before you resume entering data into the form, to minimize errors/ prevent entering data into the wrong form.

Please bear in mind that once a form is submitted, the data will be saved in a remote and secure location, and cannot be re-accessed for edits. As such please "Save" in any situation of uncertain or incomplete data entry.

If you should need to edit the data in a submitted form, please inform the data administrator Annette Hoskin, annettehoskin@yahoo.com.au , and then re-enter the data for the patient in an entirely new IGATES-1 form. The original data will be omitted from analysis to avoid data entry errors.

Procedure for entering dates:

Dates are entered using the virtual calendars embedded with the relevant questions on the IGATES form. Be sure to check the year on the calendar before selecting the month and day.

If only the year is known based on medical record, please enter the date as 1st of January for that year i.e. for "diagnosed in 2011" the date will be "01/01/2011". If only a range of years is known based on medical record, please enter the date as the midpoint i.e. for "diagnosed in 2007-2008" the date will be "01/01/2008". The same applies for wider ranges of years i.e. for "diagnosed in 2007-2011" the date will be "01/07/2009". If only the month is known, enter date as the first of that month i.e. for "diagnosed in May 2011" the date will be "01/05/2011".

If the date, month, and year are all not available, please enter date as 29/11/1111.

Procedure for entering Visual Acuity

Please select from the options in the drop-down menu provided.

Procedure for entering Clinical Findings

See Annex 2 (this is provided an overview only)

Procedure for submitting clinical photos

This will be prompted by the IGATES form at every clinical visit

If available, please upload the photo in .jpeg or .jpg formats (don't upload .tiff photos due to the heavy image size). Please also add a description in the open-ended section below the photo on the clinical findings image. The photos will be used to create database of ocular trauma and for education and research purpose.

Annexure 1: Participating centres

Annexure 2: IGATES Study Form (overview)