Southern African Journal of Anaesthesia and Analgesia. 2022;28(1)
https://doi.org/10.36303/SAJAA.2022.28.1.2637
Open Access article distributed under the terms of the Creative Commons License [CC BY-NC 3.0]
http://creativecommons.org/licenses/by-nc/3.0

South Afr J Anaesth Analg
ISSN 2220-1181 EISSN 2220-1173
© 2022 The Author(s)
ORIGINAL RESEARCH

The structure, function and implementation of an outcomes database at a Ugandan secondary hospital: the Mbarara Surgical Services Quality Assurance Database

Appendix 1: Staffing levels at Mbarara Regional Referral Hospital (2013–2017)

Staff post grade		**Staffing level by year**				
Surgery		2013	2014	2015	2016	2017
MMeds	1st year	1	4	4	5	9
	2nd year	2	1	4	4	5
	3rd year	2	2	1	4	4
Total MMeds		**5**	**7**	**9**	**13**	**18**
General surgeons		5	5	5	5	4
Specialist surgeons	Paed surgeon	0	1	1	1	1
	Cardiothoracic	0	0	1	1	1
	Neurosurgeons	1	1	1	2	2
	Plastics	0	0	1	1	2
	Orthopedic	1	1	1	1	1
Total surgeons		**7**	**8**	**10**	**11**	**11**
Otolaryngology						
MMeds	1st year	1	2	1	4	1
	2nd year	0	1	2	1	4
	3rd year	0	0	1	2	1
Total MMeds		**1**	**3**	**4**	**7**	**6**
Otolaryngologists		2	2	2	3	4
Obstetrics and Gynaecology						
MMeds	1st year	4	4	8	13	14
	2nd year	4	4	4	8	13
	3rd year	4	4	4	4	8
Total MMeds		**12**	**12**	**16**	**25**	**35**
Obstetricians/gynaecologists		7	7	7	7	7
Midwives/labour ward nurses		12	12	12	12	12
Combined surgical MMeds		18	22	29	45	59
Combined surgical specialists		**16**	**17**	**19**	**21**	**22**
Anaesthesia and Critical Care						
MMeds	1st year	0	1	4	3	2
	2nd year	1	0	1	4	3
	3rd year	2	1	1	1	4
Total anaesthesia MMeds		**3**	**2**	**6**	**8**	**9**
Total anaesthesiologists		**3**	**5**	**5**	**6**	**6**
Anaesthetic officers	Non-physicians	3	3	3	4	4
ICU nurses		7	7	7	7	7

Appendix 2: SQUAD document outlining guidelines for authorship and publication criteria

Mbarara SQUAD authorship and publication guidelines

General principles

The Mbarara Surgical Services Quality Assurance Database ("SQUAD") is an electronic database of patient demographics, interventions and outcomes at Mbarara Regional Referral Hospital (MRRH). The database includes data from the Departments of Obstetrics and Gynaecology, Surgery, Otolaryngology, and Anaesthesia and Critical Care.

The Mbarara SQUAD was formed as part of an academic collaboration between two medical schools and teaching hospital complexes, namely Mbarara University of Science and Technology (MUST) and MRRH, and Harvard University and allied teaching hospitals Massachusetts General Hospital (MGH) and Massachusetts Eye and Ear Infirmary (MEEI). The database was constructed and sustained by a team of people from these institutions.

The purpose of the academic collaboration is to improve the wellbeing and health of patients through the methods of academic medicine – dissemination of teaching and research to further clinical care. As well as informing clinical delivery and hospital administration, the database can serve as a source of data for research publications to disseminate insights into improvements in clinical care. The primary purpose of publications should be to promote and improve care, consistent with the methods of academic medicine.

Scholarly and scientific publications must comply with the relevant institutional ethics regulations. In addition, there must be appropriate attribution and priority of authorship, as outlined in guidelines below. These guidelines are intended to allow some variation in determining authorship, while ensuring consistency in the assignment of authorship.

Authorship standards

Authorship of a SQUAD scientific paper should be based on three criteria:

1. Substantial, direct, intellectual contributions to some part of the work (conception, design, conduct, analysis, or interpretation of the work)
2. Drafting the work and revising it critically
3. Final approval of the version to be published

Each author should have made a sufficient, substantial contribution to the work so as to be accountable for their roles in the project. Authors of a paper should agree amongst themselves as to what contribution to the work is suitable to meet criteria for attribution as an author.

Order of authorship

Order of authorship is determined by many different factors, including the type of publication or academic output, the scope of work, the number of authors, the designation of individual authors by a group name, the specialty or discipline, and the journal or publication outlet.

As the type and role of authorship and publication varies, definitive rules about the listing of author cannot be made. Additionally, since academic output from SQUAD may involve different academic institutions, the respective roles and inputs of authors may vary. However, some general observations about common author roles may be helpful in establishing expectations for attribution of authorship.

First author

The first author to be listed is often the person who has prepared the first draft of the manuscript, and/or taken a substantial role in the acquisition or preparation of the data. Many journals accept co-first authors, when the roles and recognition of the first authorship are shared.

Senior author

The senior author is ultimately responsible for ensuring that all other authors meet the requirements for authorship, as well as ensuring the integrity of the work itself. The senior author will supervise the overall production of the academic work. The senior author should provide a concise summary of the relevant roles of the various authors in producing the academic work. The senior author is often listed as the last author, although the senior author may also function, and be listed, as the first author.

Corresponding author

The corresponding author is the author in the academic team who communicates with the journal, publishers or conference organisers during the submission process. This author ensures the relevant regulatory processes are completed (lists details of authorship, documents ethic committee approval, and meets relevant administrative requirements). This author responds to the peer reviewer questions and suggestions, and also communicates with subsequent queries and request for information after the work is published. The first or senior author usually takes the responsibility of corresponding author.

Co-authors

The co-authors have a collective responsibility to agree on their role in the work, to determine whether their contribution merits attribution of authorship, and to assigning their place in the list of authors. In shorter lists of authors, the order of listing is often determined by the extent or significance of input by the authors. However, other criteria may be used, particularly in larger lists, such as using alphabetical order, or simply listing most authors as a group, with authors within the group noted within the manuscript. Co-authors should review and approve the manuscript, specifically those parts related to their roles in the project.

Request for data use

Researchers should submit a data request to the SQUAD Committee. Guidelines for data access are included in the Data Sharing Guidelines.

It is anticipated that the majority of SQUAD publications will have Mbarara authors as prominent contributors (for example, first or senior authors). One of the criterion by which applications will be assessed will include the extent to which proposed scientific work involves the MRRH clinical departments to promote clinical and academic improvements in Mbarara.

Conflict resolution

If there are disagreements about data access, data use or authorship of academic output from SQUAD data that cannot be resolved by the researchers or the authors themselves, the conflict will be mediated by the SQUAD Steering and Advisory Committees. If a satisfactory resolution cannot be achieved, the dispute will be referred to an appointed external group consisting of three senior representatives from MRRH, MUST and the MGH. The MGH representative should be familiar with MRRH/MUST. The SQUAD Steering Committee will invite the three representatives to mediate. Examples of potential representatives who might be invited to mediate could include the Hospital Director (MRRH), the Dean (MUST) and the MGH Mbarara Site Manager.

Appendix 3: SQUAD document outlining guidelines for the use of data

MUST-MRRH SQUAD data sharing protocol/guidelines

Introduction

The MUST-MRRH SQUAD is a computerised database that houses records from surgical patients who are treated as in- and out-patients at MRRH. The database includes initial encounter information and follow-up encounter information. Demographic, clinical and laboratory variables are included.

The database is used to facilitate the following:

- Clinical care
- Administrative reporting
- Research; and
- Planning

This database has been developed and supported by a team at MRRH/MUST and MGH/Harvard. Access to data is supervised by the SQUAD Steering Committee, with advice and input from the SQUAD Advisory Committee.

The collected data are available for all qualified investigators. Preference and priority will be given to MRRH, the academic community at MUST-MRRH, and the international partners of SQUAD.

These guidelines are put in place to:

- Streamline the data request procedures by the different users
- Facilitate the development of a record of data usage by the different users
- Uphold the need to involve the clinic team in the data collection and dissemination process

Data request guidelines

SQUAD data describes the clinical activity of departments at MRRH. Aggregate data will be freely available to MRRH clinical departments for purposes of quality assurance. Aggregate data are also freely available to the MRRH administration. Data may also be accessed under direct supervision of individual SQUAD Committee members.

Any additional aggregate data or individual patient-level data may be accessed by following the procedure outlined below:

- Submit an electronic copy of the completed data request form to the Chair of the Data Sharing Committee. This form can be obtained from the members of the data sharing committee or the SQUAD manager.
- Requests for individual-level data for any purpose, or aggregate data for the purposes of research, will be reviewed by the SQUAD Steering Committee.
- After agreement by the SQUAD Steering Committee, the request will be submitted to the SQUAD Advisory Committee at MGH for comment. If there are no objections from the Advisory Committee, the Chair will issue the authorisation/approval to the SQUAD data manager for data release.
- If the dataset required is for research, all investigators must adhere to the local policies of their respective institutions regarding institutional review board approval.

Data request form

A copy of the data request form and the data release authorisation forms are appended to this document.

Data sharing committee composition

The application is reviewed by the SQUAD Steering Committee. This committee consists of a representative of the Department of Anaesthesia and Critical Care, a representative of the Department of Surgery, two representatives of the Department of Obstetrics and Gynaecology, a representative of the Medical Records Department, and a representative of the Massachusetts General Hospital/Massachusetts Eye an Ear Infirmary.

Current members are as follows: Dr (1) (Anaesthesia and Critical Care); Dr (2) (Surgery); Dr (3) (Obstetrics and Gynaecology); Dr (4) (Obstetrics and Gynaecology); Mr (5) (Medical Records); Dr (6) (MGH/MEEI)

The SQUAD Advisory Committee consists of two representatives of the Department of Anaesthesia, Critical Care and Pain Medicine/Critical Care, two representatives of the Department of Surgery, and two representatives of the Department of Obstetrics and Gynaecology.

Current members are as follows: Dr (1) (Anaesthesia, Critical Care and Pain Medicine); Dr (2) (Critical Care/Medicine); Dr (3) (Obstetrics and Gynaecology); Dr (4) (Obstetrics and Gynaecology); Dr (5) (Surgery/Urology); Dr (6) (General Surgery).

SQUAD data request form

Complete this form and return by e-mail with required documentation to the secretary of the data sharing committee:

Applicant information:

Name:

Title:

Institution:

Email address:

Phone number:

Purpose of data use (Data may only be used for the exact purpose that they are requested.)

☐ Proposal/grant writing
☐ To publish research
☐ Administrative reporting
☐ Administrative planning
☐ Teaching/training materials

Please include the following information

1. Title of project:

2. Brief background:

3. Research objectives:

4. Description of desired study population:

5. List of desired variables:

6. Brief statistical analytic plan:

7. Funding source (Agency and Grant Number if applicable):

Applicant agrees to:

- *Cover the cost of retrieving data for this request. Cost will be determined by the SQUAD Steering Committee.*
- *Use data only for agreed upon purposes.*

Date request submitted:

Applicant signature:

Outcome:

Data sharing committee members' opinion/comments:

Action:

☐ Approved
☐ Disapproved
☐ Returned for additional information

Date:

Signature of Secretary, SQUAD Steering Committee:

Authorisation of data release:

I authorise you to provide data to:

Date:

Signature of Secretary, SQUAD Steering Committee:

Appendix 4: SQUAD data dictionary

Entry values are binary unless specified in parenthesis.

Demographics

Unique patient identifier: Autogenerated by database

Medical Record Number(s): Numeric (up to three)

Birth date: (date)

Gender: Male; Female

Tribe: Nkole; Ganda; Kiga; Rwanda; Other (text)

Occupation: Peasant; Housewife; Business; Civil Servant; Other (text)

Address: District (text); County (text); Parish ward (text); Village (text)

Education: None; Primary; Secondary; Other (text)

Admission data

HIV status: Positive; Negative

Admission: Ward: Surgery; Gyn; Obs; Medical; Paed; ENT

Gravida: (numeric)

Parity: Live (numeric); Still birth (numeric); Abortion (numeric)

Referral: Emergency; Outpatient; Medicine; Self; Health Center IV; Private Clinic; Paediatric; Transferred: Regional Referral; General Hospital; Other (text)

Referral reason: Lack of skills; Nonfunctional equipment; Lack of supplies/drugs; Other (text)

Transfer in: No; Medical Ward; Paed Ward; Gynae Ward; Obs Ward; Surgery Ward; Other (text)

Surgery performed prior to admission: Yes; No

Surgery schedule date: (date)

Surgery decision date: (date)

Transfusion: Yes; No not required; no blood not available; Other (text)

Preoperative transfusion: Yes; No; Number of units (numeric)

Intraoperative transfusion: Yes; No; Number of units (numeric)

Postoperative transfusion: Yes; No; Number of units (numeric)

Nonoperative transfusion: Yes; No; Number of units (numeric)

Multiple transfusion: Yes; No; Text

Preoperative bloodwork: CBC; Hb; Malaria; Electrolytes; Other (Yes; No; Text)

In-patient ent

Diagnosis: ICD-10 coded

Location: Ear; right ear; left ear; both ears; head/neck; nose; sinus; nasopharynx; oral cavity; oropharynx; larynx; hypopharynx; oesophagus; parapharyngeal space; retropharyngeal space; other (text)

Urgency: Emergent; Urgent; Elective

Procedure: ICD-9-CM coded

Operative

Surgery date: (date)

Urgency: Elective; Urgent; Emergent

Reason for delay: No delay; Staff availability; Patient decision; Logistical; Other (text)

Surgeon: (text)

Surgeon training: Intern; SHO; Specialist; Other (text)

Theatre: Surgery; Obs-Gyn

Assistant surgeon: (text)

Assistant surgeon training: Intern; SHO; Specialist; Other (text)

Indication for surgery: (text)

Surgical procedure: ICD 9 CM code (up to three procedures)

Laterality: Left; Right; Bilateral

Surgery Site: ENT; Abdominal; Urologic; Plastic; Neurosurgical; Perineum; Orthopaedic; Ophthalmic; Thoracic; Urogynae; Cutaneous

Anaesthetist: (text)

Anaesthetist training: Officer; SHO; Specialist; Other (text)

Anaesthetic type: GA; Spinal; Block; GA + block; GA + spinal; Local; Other (text)

Anaesthesia duration: (numeric)

ASA score: 1;2;3;4;5; Undocumented; Emergency

Prophylactic antibiotics: Yes; No

Operative time: (numeric)

Reoperation: Yes; No

Reoperation reason: (text)

Postoperative diagnosis: Diagnosis 1, Diagnosis 2 (text)

Surgical outcome: Good; Fair; Poor; Died in OR

Pathology sent: Yes; No

Pathology finding: (text)

Operative comments: (text)

Postoperative complications: Wound infection; Dehiscence; Pneumonia; Urinary tract infection; Deep vein thrombosis; Pulmonary embolism

Nerve block: Popliteal/sciatic; Saphenous; Tibial; Common Peroneal; Ankle; TAP; Other (text)

Date performed: (date)

Side: Right; Left; Bilateral

Block complication: Primary; Postoperative

Block approach: Ultrasound; Nerve stimulator; Landmark; Single Shot; Catheter; Other (text)

Needle used: 25mm insulated; 60 mm insulated; 80 mm insulated; 25 gauge; Other (text)

Anaesthetic used: None; Intravascular; Intraneural; Failed block

Block performed by: (text)

Training of block provider: Resident; Student; Staff

Postoperative block resolution: (date)

Trauma

Injury

Trauma system: Neurosurgical; Orthopaedic; Abdominal; Chest; Perineum; Skin; Head; Neck; Other (text)

Date of injury: (date)

Trauma classification: Blunt; Penetrating, Burn; Other (text)

Injury mechanism: Assault; Pedestrian; Boda-Boda rider; Boda-boda passenger; Vehicle driver; Vehicle passenger; Fall; Other (text)

Transport mode: Walk; Boda-boda; Bus; Car; Ambulance; Other (text)

Initial trauma assessment: Temperature (numeric); Heart rate (numeric); Systolic blood pressure (numeric); Diastolic blood pressure (numeric); Respiratory rate (numeric); Oxygen saturation (numeric); FiO2 (numeric)

Diagnostic studies: Head CT; Abdominal CT; Abdominal ultrasound; X-ray; Initial GCS (numeric); Post resuscitations GCS (numeric)

Oncology

Site: Breast; Oesophagus; Lung; Skin; Larynx; Nose; Colon; Prostate; Oropharyngeal; Cervical; Endometrium; Stomach; Ovarian; Not specified; Other (text)

Diagnosis method: Clinical; Pathological

Cancer stage: (text)

Surgery: Yes; No

Chemotherapy: Yes; No

Radiation: Yes; No

Disposition: Cancer clinic; Referral; Home; Palliative care; Other (text)

Obstetrics

Prior live births: (numeric)

Prior still births: (numeric)

Prior caesarean: Yes; No; Number of prior caesareans (numeric)

Labor: Yes; No

First cervical exam dilation: (numeric)

Maximal cervical dilation: (numeric)

Induction/augmentation: Yes; No; Not documented

Pre-eclampsia: Yes; No; Not documented

Eclampsia: Yes; No; Not documented

Antepartum onfection: Yes: No; Not documented

Uterine rupture: Yes; No; Not documented

Meconium: Yes; No; Not documented

Post-partum haemorrhage: Yes; No

Delivery date: (date)

Delivery method: C/S; Vaginal vertex; Vaginal breech; Forceps; Vacuum

C/S classification: Emergent; Urgent; Unscheduled; Elective; Not documented

Indication for CS: Dystocia; Vaginal contraindicated; Fetal concerns; Maternal concerns; Physician preference; Obstructed labor; Contracted pelvis; Malposition; Malpresentation; Macrosomia; Oligohydramnios; Polyhydramnios; Fresh scar; Previous scar; Hypertension; Chorioamnitis; Uterine rupture; Antepartum haemorrhage; Multiple pregnancy; Cord prolapse; Other (text)

Decision time: (numeric)

Incision time: (numeric)

Outcomes

Best estimation of gestation age: (numeric)

Baby gender: Male; Female

APGAR 1 minute: (numeric)

APGAR 5 minute: (numeric)

Still birth: Yes; No

Still birth type: Fresh; Macerated; Not specified

Neonatal death before discharge: Yes; No

Maternal death before discharge: Yes; No

Post-partum infection: Yes; No

Post-partum haemorrhage: Yes; No

Post-partum haemorrhage requiring transfusion: Yes; No

Congenital abnormality; Yes; No; Details (text)

Maternal outcome: Lived; Died

Intensive care unit

Admission diagnosis: (text)

Postoperative admission: Yes; No

Scheduled admission: Yes; No

Admission type: Direct; Outside Hospital; Transfer

Admission origin: Surgery Ward; Paediatric Ward; Obstetrics Ward; Medicine Ward; Emergency Ward; Gynae Ward; Outside Hospital; Other (text)

Admission diagnosis: Sepsis; Haemorrhage; Immunosupression; Respiratory failure; Mental; Trauma; Hypotension; Renal failure; Seizure; Postoperative monitoring; Postoperative ventilation; Pain management; Other (text)

System diagnosis: Cardiovascular; Renal; Haematological disorder; Pulmonary; Malignancy; Neurological disease; Gastrointestinal; Endocrine disorder; Infectious; Musculoskeletal; Other (text)

Admission assessment: Temperature (numeric); Heart rate (numeric); Systolic blood pressure (numeric); Diastolic blood pressure (numeric); Respiratory rate (numeric); Oxygen saturation (numeric); FiO2 (numeric)

Diagnostic studies: CXR; CT abdomen; CT head; Ultrasound; Lumbar puncture

Laboratory studies: WBC (numeric); Haemoglobin (numeric); Sodium (numeric); Potassium (numeric); Bicarbonate (numeric); Creatinine (numeric); pH (numeric); pa02 (numeric); CGS (numeric); Gram stain (Positive; Negative); Gram stain source (Sputum; Urine; Blood; Wound); Culture (Positive; Negative); Culture source (Sputum; Urine; Blood; Wound); Malaria (Positive; Negative); Tuberculosis (Positive; Negative); Tuberculosis date (numeric)

Treatment: IV fluids; Blood transfusion; Antibiotics; Oxygen; Vasopressors; Tube feeds; Anti-seizure medications; Magnesium; Insulin; Steroids

Intervention: Mechanical ventilation

Mechanical ventilation start date (numeric); Stop date (numeric); (three episodes); Arterial line placement; Central access; Dialysis; Thoracentesis; Paracentesis; Surgery; Delivery; Other (text)

Outcome: Lived; Died; Referred

Cause of death: (text)

ICU discharge date: (date)

Disposition

Discharge diagnosis: ICD-10 diagnosis (Up to three diagnoses)

Discharge disposition: Discharged; Transferred; Died; Run away; Referred; Other (text)

Referral reason: Lack of skills; Lack of equipment; Lack of supplies; Other (text)

Cause of death: (text)