

CALS

Cardiac Surgery Advanced Life Support

Saving Lives Through Education



- Incidence of cardiac arrest in cardiac surgery is upto 8% of which more than 50% die.
- Failure to rescue and interhospital variation in practice are the commonest factors for the mortality.
- Timely intervention and early chest reopening improves the outcomes.
- CALS is a standard but unique set of resuscitation protocol for cardiac surgical arrest.
- CALS is endorsed by STS, EACTS, ERC and ILCOR.
- CALS improves the chance of survival in post-cardiac surgical arrests.
- CALS Courses are run around the world and there are approximately 75 International CALS Centres of Excellence.
- CALS Courses in India are scheduled to take place on the 23rd, 24th & 25th March 2019 at Sri Ramachandra Institute of Higher Education and Research in Chennai.
- CALS teaches the doctors, nurses and allied professionals about prevention and resuscitation of cardiac arrests in cardiac surgical patients.
- CALS Courses include e-learning, didactic lectures, simulation and hands-on training.
- CALS uses a 4th Generation 3D Mannikin to practise sternotomy within minutes.
- CALS advocates six key roles for resuscitating patients.
- Participants receive a digital certificate with a unique international ID that is issued centrally by CALS UK.

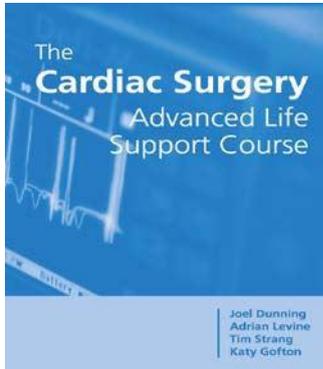
Does your hospital want to become a CALS Centre of Excellence?

Do you want to be trained and certified in CALS?

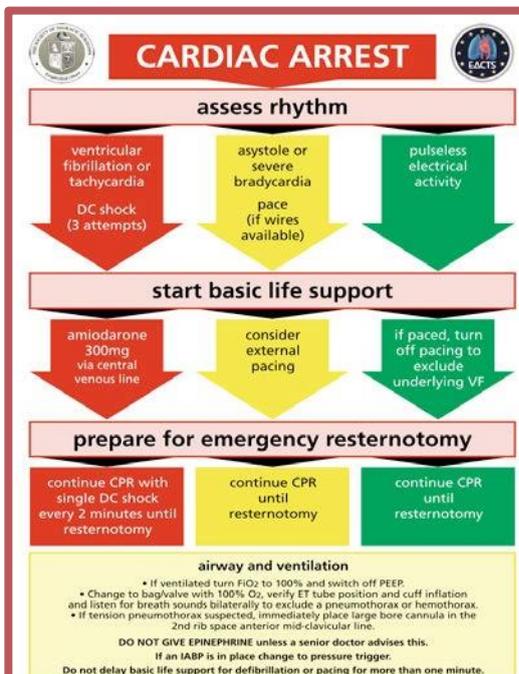
Visit: www.calsindia-uk.com

Email: calsindia@mediknit.org

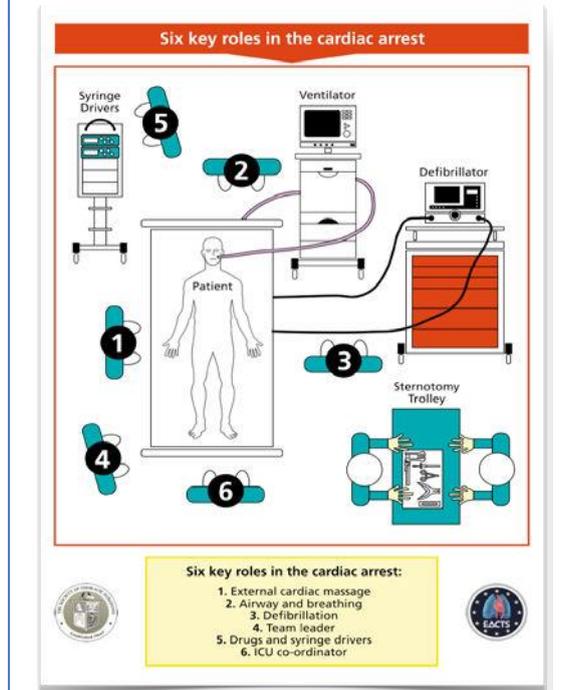
CALS TRAINING ADJUNCTS



CALS PROTOCOL



SIX KEY ROLES





WELCOME TO CALS COURSE

Dear all,

Sri Ramachandra Institute of Higher Education and Research(SRIHER) is pleased to host a CALS Provider and a Trainer course here at Chennai in March 2019. The venue for the course will be the **Center for Sports Science, SRIHER**. Following this introductory course [SRIHER cardiac hospital in India will become the first training centre for CALS](#) (Cardiac Surgery Advanced Life Support).

The courses are scheduled on the following dates:

- Saturday, March 23, 2019: Provider Course
- Sunday, March 24, 2019: Trainer Course
- Monday, March 25, 2019: Provider Course

The course will be taught by the expert faculty of:

- Dr Vince Giordano, Cardiac Surgeon, Edinburgh, UK
- Dr Kiran Salaunkey, Cardiac Intensivist, Cambridge, UK
- Ms Tara Bartley, Cardiac Nurse, Birmingham, UK

Congratulations to those who have secured a space on the course, whether that be on Provider course and/or Trainer Course. The purpose of this course is to set up both a bank of providers here at SRIHER and to form an expert faculty to run future CALS provider courses. There will be potential future opportunity for certified providers to undertake a TTT course, this will be dependent on nomination by the future faculty.

Aim of the provider course:

- Introduce the CALS cardiac arrest protocol - EACTS/STS guidelines
- Enhance team dynamics during cardiac arrest
- Increase confidence in managing cardiothoracic emergencies
- Demonstrate how to perform emergency re-sternotomy within 5 minutes

Sessions include:

- Cardiac arrest: Re-sternotomy, emergency airway, pacing and IABP SIM
- '5 point plan'
- Human factors
- Practical and didactic teaching by expert faculty



For the delegates attending day 2 TTT - you will form our faculty for future CALS courses! We aim to run provider courses here 2 x yearly and there may be opportunity for you to attend and teach on other CALS UK or international courses.

TTT course aims and covers:

- Inform of the evidence behind the CALS guidelines/protocols
- Formation of an expert faculty
- Enhance ability to give feedback
- Demonstrate how to run the practical sessions
- Setting up a successful CALS course

We have attached the course programmes for you to read and get a feel of - this may be subject to change in future courses.

Ahead of the course you will all receive an eLearning code to complete your pre-course e-learning module. Please make your payments and complete your registration at least two weeks in advance to access the e-learning. There is a lot of pre course eLearning material for you to get through, so advice would be to start as soon as possible. A CALS Course Manual will be provided on the day of the course.

All that remains to be said is that we are looking forward to seeing you all on the course! Any queries please don't hesitate to contact us.

Kindest regards,

CALS Course Administrators
SRIHER



Saving Lives Through Education



**CARDIAC SURGERY ADVANCED LIFE SUPPORT
TRAIN THE TRAINERS COURSE
PROGRAMME SCHEDULE**

0830-0900	Registration
0900-0910	Introduction to the course
0910-1000	The Evidence Behind the guidelines- VG
1000-1010	Running the Cardiac Arrest Practical- Faculty
1010-1115	PRACTICAL: Running the Cardiac Arrest Practical - Faculty
1115-1145	BREAK
1145-1300	PRACTICAL: Tell a story to make a point. – How to present CALS- Faculty
1300-1330	LUNCH
1330-1400	How to give feedback- TB
1400-1500	PRACTICAL: Running the CALS scenarios- Faculty
1500-1530	How to set up a course, practical considerations- KS
1530-1600	Common questions that are asked about the CALS- Faculty
1530-1600	Certification, CALS structure, E-learning- KS

All candidates will be certified as a CALS trainer at the end of this course.



**CARDIAC SURGERY ADVANCED LIFE SUPPORT
PROVIDER COURSE
PROGRAMME SCHEDULE**

0800-0900	Introduction to CALS: The EACTS /STS guideline for resuscitation in cardiac surgery- VG
0900-1000	DEMO & BASELINE PRACTICE: Cardiac arrest management with chest opening- Faculty
1000-1015	BREAK
1015-1100 1015-1030 1030-1045 1045-1100	Management of Cardiothoracic Emergencies - The 5-point plan- TB - CVS problems: Hypotension & arrhythmias - VG - Respiratory problems: Videos, CXRs, Blood gases of Pneumothorax, ARDS, Effusions- KS
1100-1230 1100-1145 1145-1230	Practicals I Practical 1: Airway management- KS/TB Emergency airway management in arrest; Preparing to assist for a difficult airway for non-anaesthetists Practical 2: Chest re-opening- VG/TB & Mechanical support- KS Opening chest in 5minutes; Mechanical support options (Central VA/ Peripheral VA/ RVAD) when the resuscitation does not end with Return of Spontaneous Circulation (ROSC)
1230-1315	LUNCH
1315-1400 1315-1340 1340-1400	Practicals II Practical 3: CXR - KS Practical 4: Emergency Epicardial Pacing - TB
1400-1445 1400-1420 1420-1445	Practicals III Practical 5: Intra-aortic balloon pump- VG Practical 6: Echocardiography (TTE & TEE)- KS
1445-1500	BREAK
1500-1515	Putting it All Together- KS
1515-1545	Human Factors in Cardiac Surgical Emergencies- TB
1545-1645 1545-1630 1630-1645	Practicals IV Practical 7: Scenarios- Faculty Practical 8: Scoop and Run - Faculty
1645-1730	POST-TEST: CARDIAC ARREST MOULAGE- Faculty Cardiac arrest management with chest opening
1730-1800	Summary and Evaluations- Faculty



CARDIAC ADVANCED LIFE SUPPORT (CALs) – An overview

<https://www.csu-als.com>

Background

In 2003, there was a cardiac arrest on a patient four hours post cardiac surgery in a large center in the north of the United Kingdom (UK). Over the next four hours, the patient's chest was re-opened three times and eventually the patient was re-grafted in his ICU bed on cardio-pulmonary bypass. Many junior staff both medical and nursing reported they felt disorganized and of little help to the situation and would have performed much better if they had a defined and well-practiced role. Further research over the years demonstrated that there was an appreciable rate of Cardiac Arrest post Cardiac Surgery (up to 8% in the US in some hospitals) with a variable chance of survival and extreme morbidity in many survivors. In response to this, two cardiac surgeons from the UK created the Cardiac Surgery Advanced Life Support course (CALs).

Development

Central to the teaching of such a course was the development of a protocol that addressed the unique set of challenges that was associated with cardiac arrest post cardiac surgery. This was accepted by the European Association of Cardiothoracic Surgeons (EACTS) audit and guidelines committee as a project in 2007. A multimodal methodology of systematic reviews, an international survey (of 350 surgeons), collaboration with the European Resuscitation Committee (ERC) and the International Liaison Committee on Resuscitation (ILCOR) and practical arrest moulages finally produced a guideline which was accepted two years after the project started. It became the European Association of Cardiothoracic Surgery's official protocol in 2009 (European Journal of Cardiothoracic Surgery, Volume 36, Issue 1, 1 July 2009, Pages 3–28). This was accepted by the ERC and ILCOR over the next two years.

Academically it was realized that cardiac surgery around the world although similar had slight differences and thus there was a need to change (and update) the protocols for different areas. With that in mind the process was repeated again in the United States of America starting in 2014 with the setting up of a Resuscitation Taskforce of the Society of Thoracic Surgeons (STS). A similar process (now using a DELPHI methodology) was carried out and was accepted by the guidelines committee and published in March 2017 as The Society of Thoracic Surgeons Expert Consensus for the Resuscitation of Patients Who Arrest After Cardiac Surgery (The Society of Thoracic Surgeons Task Force on Resuscitation After Cardiac Surgery) (Annals of Thoracic Surgery, Volume 103, 1 March 2017, Pages 1005–20).

The process is being repeated again in Australia and New Zealand (with a similar methodology to the STS) by a multi-disciplinary body (The CALS-ANZ board) comprising of Cardiothoracic Surgeons, Intensivists, Anesthetists and Nursing Staff. It is ongoing at the time of writing (August 2018).

The Protocol

The core of the protocol is the understanding that most cardiac arrests in the early phase post-cardiac surgery are related to causes for which external cardiac compressions (CPR) are unable to provide any meaningful cardiac output (cardiac tamponade, hypovolemia, etc.). Thus, in this situation standard ALS protocols are completely ineffective. Due to the fact that a warm ischemic time of more than 5 minutes causes irreversible neurological injury, it is mandatory that re-sternotomy and if necessary internal cardiac massage occurs if done effectively within five minutes of the cardiac arrest improves the chances of survival.

In contrast to standard ALS teaching, CALS mandates that prior to basic life support attempts e.g. external CPR, etc. that 3 sequential DC shocks be given if the patient is in VF, an attempt at the external pacing via epicardial wires if the patient is in asystole or extreme bradycardia and finally if the patient is in PEA and they are externally paced that the pacemaker is turned off to exclude fine underlying VF.

CALS teaches a unique way of organizing staff to maximize efficiency in resuscitation and re-sternotomy in the event of a cardiac arrest. It suggests that there are six key roles of which two (team leader and ICU coordinator) are the most important. Each of these key roles is stand alone with an ethos of encouraging optimal team working by leadership (by the team leader) with active followership by all other roles. Furthermore, there needs to be readily available specialist equipment e.g. airway adjuncts, drugs, defibrillators, external pacing boxes, basic surgical re-sternotomy kit, etc. available to allow for timely resuscitation.

The Teaching

Educationally, there is a considerable literature to support the efficacy of the teaching of CALS. It is taught generally as a one-day course. The course is a mixture of a small number of didactic lectures with a large amount of practical teaching and group moulages of arrest and pre-arrest scenarios taught in a variety of venues (from Simulation Centers to side rooms on ICU's).

It is taught to all groups of staff involved in the care of cardiac surgical patients e.g. surgeons, anesthetists, intensivists, nurses, etc. Due to the large number of people needed to be trained the course is taught in two forms, Provider and Train the Trainer. Each course teaches 12 -30 providers using a staff of 3 – 5 trainers for every course. Each center carries out 3 – 5 courses a year.

Training is aided by eLearning courses (www.calselearning.com), manuals (available from www.Lulu.com) in a number of different languages, and the use of specially designed Re-sternotomy Mannikin and the '5 piece set' (a basic surgical re-sternotomy kit) (www.csu-als.com).

Evidence

Variation in mortality between hospitals in similar healthcare systems is endemic worldwide. A means of studying variation in mortality is the use of the concept of failure to rescue (FTR), which gives a measure of the institutional success in treating commonly preventable deaths after surgery. As such FTR varies considerably amongst hospitals in the US (Ann Thor Surg, Volume 98, Issue 2, August 2014, Pages 534-540). The CALS protocols have been shown to have reduced the FTR after Cardiac Arrest in a large cardiac surgical program in the West Coast of the US (by 80% over a 3-year period). This is now being further studied by a 19-hospital group (the Virginia Cardiac Surgery Quality Initiative) in the North-Eastern USA.

The Present

CALS has become the standard of care for resuscitation post cardiac surgery in the UK and US. Courses occur throughout the UK, US, Europe, Australia, New Zealand and South Africa. It is mandatory for all cardiothoracic trainees in the UK and is being considered as such for all trainees in the US. In Australia and New Zealand, it is accepted by ANZICS as continuous professional activity. In Spain it is becoming mandatory for all intensivists. The course is also run in South Africa and Pakistan. Further courses are planned to take place in India, China, Sweden, Mexico and Costa Rica. CALS is taught in a growing number of "centers of excellence" around the world. At the time of writing there are 25 such centers in the US, 15 in the UK, 4 in Spain, 1 in South Africa, and 11 in Australia and New Zealand. In late 2018, further centers will open up in the US, Canada, the UK, Sweden, Spain and Mexico.

Governance and Quality Assurance

CALS courses throughout the world are 'governed' by CALS UK Ltd. Continual medical/nursing education and revalidation is maintained by a certification process for all providers (with yearly electronic updates and bi-annual course attendances) and trainers with a central database (in line with other International Resuscitation courses e.g. ALS, etc.) allowing tracking of all trainees and trainers.