



Gap Analysis On Emergency Care Services In The Western Province- Sri Lanka

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Abstract

Introduction: The lack of integrated, organized emergency care leads to millions of preventable deaths and creates wide discrepancies in outcomes across the range of emergency conditions.

Objective: To identify the selected aspects in gaps of emergency care services in all health care institutions in the Western Province.

Methodology: It was a descriptive cross sectional study which evaluated the emergency care services in all Health Care Institutions in the Western Province. The sample was all 39 Health Care Institutions which are at different levels of care. Emergency services were assessed through a validated questionnaire. It was focused on the case load, infrastructure, diagnostic facilities, human resource and quality.

Results: The gaps identified were: • Lack of triage categorization, triage documentation and knowledge of ED case-mix by triage category • Lack of documentation of critical timings for patient care in the ED with resulting lack of knowledge of status of patient flow through the ED. There is also resulting lack of data on time based operational quality indices in EDs in Sri Lanka. • Relative lack of appropriate physical infrastructural facilities at most EDs in the Western province that are not commensurate with patient load and national guidelines on A&E services. • Significant shortage of critical professional staff, especially doctors and nurses in most EDs compromises the speed and quality of care EDs are able to provide • Lack of uniformity in availability of imaging and laboratory facilities to the different levels of EDs • Significant variability in quality of documentation in ED medical records

Conclusion: This study identifies many gaps in different aspects in the Emergency care. Recommendations: An emergency care model should be developed which appropriate for Sri Lanka.

Introduction

All around the world, Acutely ill and injured people seek care every day. Frontline providers manage children and adults with a wide range of emergency conditions, including acute injuries (from road traffic crashes, falls, burns), Infections (pneumonia, sepsis, malaria), complications of pregnancy, and exacerbations of non-communicable diseases (heart attacks, strokes). Despite the fact that most “primary” care initiatives are characterized by a focus on longitudinal and preventive care, many people seek care only when acutely ill or injured, especially where there are logistical or financial barriers to accessing health care. For many people around the world, emergency care is the primary point of access to the health system, and is thus, essential to universal health coverage.

Emergency care systems (ECS) address a wide-range of medical, surgical and obstetric conditions and span care at the scene, through transport and care in an emergency unit, to early operative and critical care in the inpatient setting. By ensuring early recognition of acute conditions and timely access to needed care, organized emergency care systems save lives and amplify the impact of many other parts of the health system. The world Bank Disease Control Priorities Project estimates that with sound organization, ECS have the potential to address over half of deaths and a third of disability in low- and middle-income countries (REF: DCP 3rd Edition, Vol 1, ch 14).

The lack of integrated, organized emergency care leads to millions of preventable deaths and creates wide discrepancies in outcomes across the range of emergency conditions: for example, death rates from serious injury in low-income settings are nearly twice that in high-income settings ;overall mortality rates from diabetic ketoacidosis are less than 1% in high-income countries , but up to 30% in low – and middle-income countries. Simple, low-cost interventions to strengthen timely emergency care delivery can have dramatic impact on clinical outcomes, and well-integrated emergency care has enormous potential to save lives even with limited input of new material resources.

Given the potential to reduce death and disability in SEAR through improvements in emergency care, regional governments and WHO have prioritized strengthening ECS and integrating emergency care effectively into existing Primary Health Care (PHC) structures.

Current Status of Emergency Care in the South-East Asian Region

SEAR countries constitute 20% of the global population, The burden of emergency conditions in this region is enormous. The SEAR countries have many common aspects of economy, culture, health care systems, disease profile, social habits, environmental conditions and transport systems, suggesting that there may be common challenges and that development of regional strategies may be an effective mechanism to accelerate emergency care system strengthening.

Presently, Emergency care is fragmented in many senses of the word. Pre-hospital care is comprised of largely uncoordinated transportation of patients to hospitals – sometimes utilizing vehicles managed by different agencies (police, health, transport and Road Ministry, NGOs, others) to transport patients to the same facilities. often the personnel are not trained in emergency care and just perform the functions of driver and attendant. There may simultaneously be substantial service gaps and redundant services-different OTs, Different sets of emergency personnel, differing levels of quality of care for different health problems, different operating procedures within the same health facility. “specialization”, ”hierarchies” and “geographical inequities “also may play a role in fragmentation of care. This has implications in terms of lives lost, DALYs, quality of care provided to those in need, wastage of resources, and increased out of pocket expenses by patients and there families. Moreover a common telephone number for emergencies, including RTI are hard to come by. There are multiple standalone organizations responsible for provision of high quality emergency medical care and to advance the science and art of its delivery. Staffing within the emergency departments is distributed among physicians of various specializations and level of training. This leads to a severely fragmented emergency care system. Severely fragmented emergency care systems leads to erratic emergency care with dismal patient outcomes and minimal benefit to public health.

Integrated systems of emergency care that are effective, accessible and affordable either still do not exist in most parts of SEAR , or are available only to a limited percentage of the population. Though at times There Is Some Semblance of “integration in patches” at certain levels (e.g. emergency room or “Casualty” may serve as a common reception for patients coming to the hospital, some sort of triage may be carried out few facilities), effective and useful integration in its true sense is rare. Effective health coverage for emergency conditions is far from universal.

The pre-hospital emergency medical service (EMS) systems across SEAR have existed for less than 15 years. Many SEAR Countries are beginning to recognize the importance of such a system, including enhanced ambulances to improve patient survival. The population per ambulance ranges from 2,106 in Philippines to

207,360 in Singapore. The proportion of paramedics (with various levels of training) among the EMS personnel ranges from 0.06% in Philippines to 72% in Thailand. Prehospital care is provided by ED staff in India, Malaysia, Thailand, and for selected cases in Philippines.

However studies have shown that over 50% of trauma patients in SEAR countries died before reaching the hospital. Less than 20% of these patients were transported by ambulance. Trauma surgeons were available in only 3 of the 13 countries. A trauma registry existed in only 5 of the 13 countries.

There are also gaps in SEAR countries in the area of developing and enforcing legislation critical to emergency care delivery: bystander protection (or Good Samaritan laws, and laws that ensure access to emergency care without regard to ability to pay. A WHO toolkit to support countries in the establishment of such laws is under development.

Many of the SEAR countries also either lack key laws related to the prevention of emergency conditions or face challenges in enforcing these laws (Figure 3).

Srilanka:

Srilanka has already developed national accident and emergency policy by the act of parliament. Currently, there are 40 emergency medical physicians in Sri Lanka. However specialist training programme for emergency physicians was initiated in 2012. There is taxis or their private vehicles to get to the hospital in the case of an emergency. In 2016 Suwasariya pre hospital care service was initiated and currently well functioned. All of the hospitals have emergency treatment units. Those at larger hospitals tend to be better than those at smaller hospitals. Although there is a disaster management system, it is not focused on emergency medical needs.

Justification

Sri Lanka has achieved impressive health status indicators almost comparable with those in the developed world. However, accident and emergency care services need further development. An accident or an emergency (A&E) is an injury or illness that is accrued and poses an immediate threat to a person's life. These patients present with potentially life threatening conditions without prior notice, which need prompt attention and appropriate emergency care.

Health services have to respond to emergencies on land, maritime boundaries and air space. In addition to providing the day to day accident and emergency need of the population, it has to provide emergency care in an event of a disaster and as well as in public health emergencies of National and International concern.

Accident and emergency care is a demanding and complex area of practice, presenting diverse challenges for patient-centered care. In the recent past there has been an increasing incidence of accidents and emergencies. Deaths and disabilities due to accidents and emergencies which in turn would also minimize the premature deaths (deaths below 65 years of age) with well established and a responsive emergency care service.

The government policy envisages the country aspire to be a nation with a high quality of life for all of its citizens having standards of living comparable to the developed world. With the contemporary development efforts in Sri Lanka, the Ministry of Health has identified the need for establishing a sound accident and Emergency Care policy in order to develop comprehensive Accident and Emergency Care Services on priority basis.

Many models of accident and emergency care are practiced throughout the world starting from Emergency Treatment Units (ETUs) to dedicated Emergency and Trauma Care apex Centres.

The basic emergency and trauma care in Sri Lanka was established with the introduction of first ever ETU at the Base Hospital Nuwara Eliya in 1988, followed by many other hospitals. The concept of Preliminary care Unit (PCU) which is a more advanced care model was introduced in 1998 at the Base Hospital Hambanthota. Subsequently many PCUs were established in other hospitals as well. The establishment of

purpose built Accident Service at the National Hospital of Sri Lanka in 1991 was an important landmark in emergency trauma care. Provincial General Hospital Kurunegala pioneered the establishment of an accident and Emergency Unit in Sri Lanka in 2002.

The pre-hospital care service namely “suwasariya” has been able to provide a great service to the urban and rural population throughout Sri Lanka, receiving over 5000 calls and hospitalization of over 1000 patients per day.

Suwasariya has a staff of 1,394 and 297 ambulances. Suwasariya is not just a fleet of ambulances with the ability to manage emergencies, including first aid, they are a team of trained staff with commitment, accountability and responsibility. The suwasariya service has won the trust of the people at grass root level of the country.

In this survey it is designed to assess the current status of the emergency service in Selected health care Institution Island wide. These assessment will be compared with standards expected by the A & E policy of Sri Lanka. The analyzed gaps of emergency care services planned to be addressed by a different strategic plan or introducing appropriate modal of care.

Objectives

Gap Analysis of Emergency Departments of health care institutions in the Western Province

(Case load/Infra structure/Investigations/Human Resources)

Methodology

The study is cross sectional Descriptive .

Study Population will be all the hospitals in the Western Province.

The number of hospitals involved in the survey is 39. According to the 3 Districts in the province hospitals are as follows.

List of Government Hospitals Western Province

Colombo	Gampaha	Kalutara
National Hospital Of Sri Lanka	Teaching Hospital Ragama	District General Hospital Kalutara
Teaching Hospital Kalubowila	District General Hospital Gampaha	Base Hospital Panadura (A)
Base Hospital Homagama (A)	District General Hospital Negambo	Base Hospital Horana (A)
Base Hospital Panadura	Base Hospital Kiribathgoda	Divisional Hospital Pimbura (A)
Base Hospital Avissawella (A)	Base Hospital Mirigama	Divisional Hospital Mathugama (A)

Divisional Hospital Watura (A)	Base Hospital Wathupitiwakla	Divisional Hospital Beruwala (B)
Divisional Hospital Thalangama (B)	Divisional Hospital Kandana (A)	Divisional Hospital Darga Town (B)
Divisional Hospital Piliyandala (A)	Divisional Hospital Divlapitiya (A)	Divisional Hospital Ingiriya (A)
Divisional Hospital Moratuwa (B)	Divisional Hospital Dompe (A)	Divisional Hospital Baduraliya (B)
Divisional Hospital Padukka (B)	Divisional hospital Minuwangoda (A)	Divisional Hospital Bulath Singhala
Divisional Hospital Maligawatte (Type C)	Divisional Hospital Radawana (B)	Divisional Hospital Ittapana (B)
Divisional Hospital Kosgama (Type C)	Divisional Hospital Akaragama (C)	Divisional Hospital Meegahatanna (B)
	Divisional Hospital Ja Ella (C)	Divisional Hospital Gonaduwa (C)
	Divisional Hospital Pamunugama (C)	

Sampling is not needed as all the hospitals listed are included in the study

The principal Investigator will trained the Pre intern doctors as the data collectors. The data will be collected with the permission of the Head of the institutions. The data collectors will visit the Institution as planned in each District.

The survey document was developed in consultation with the experts in the Emergency Care field locally as well as internationally.

Study Variables

Finally it was decided to measure the

1. workload
2. Infrastructure facilities
3. Human Resources available at Emergency Department.

The study was approved by the Ethics Committee for the National Hospital, Sri Lanka. Exemption from informed consent was provided as personal characteristics of patients were not to be collected.

Results

A total of 38 Emergency Departments, all from the Western Province, Sri Lanka, were covered in this study. Of these three, viz. the National Hospital and two teaching hospitals were Level 1, three were Level 2 District hospitals, 7 were Level 3 Base Hospitals and the remaining 25 were Level 4 Divisional Hospitals. None of the hospitals were able to provide a breakdown of the case mix by triage category. This was because even though triage nurses checked patients' presenting complaints and documented vital signs, they did not allocate a triage category to each patient, even if the patient was seen in a specific

area of the ED, such as the Resuscitation area (Category 1). The ED records do not capture the patient's triage category. None of the hospitals captured accurate waiting times. The waiting times stated were estimates that the doctors in each department provided without benefit of objective available data. Though the patient registration times were captured in the ED systems, whether manual or electronic, the time of the doctor seeing the patient for consultation was frequently not captured by the attending doctor resulting in an inability to capture average waiting times. Instead, guesstimates were provided by each ED as to the average waiting time in the ED.

Emergency Department Patient Load, Waiting Times and Disposition

For all hospitals in the Western Sector, the total ED patient census includes those who come specifically for an emergency condition, the lack of which would not have resulted in the attendance, and those who are booked for elective admission to the hospital by doctors from the other clinical departments. It is regular practice for such booked admissions to be seen by a doctor at the Hospitals' Outpatient Department and then to be sent to the ED to process the booked admission. These booked admissions are generally not clerked by ED doctors. However, their numbers are included in the overall official ED patient census. In the Western province of Sri Lanka, out of an official ED patient census of 96, 314 for the month of September 2021, these booked admissions constituted 40.4%. The remaining 59.6% are those patients who specifically came to the various EDs for an apparently emergency condition. These remaining 57,426 patients constitute the true ED population for whom the services of the ED (also referred to, by-and-large, as Emergency Treatment Units or ETUs) are catered. The rest of this report will deal mainly with this group of patients who will be referred to as ED attendances, to differentiate them from the elective booked admissions.

Level 1 Hospitals (Table 1)

1. The total ED attendances for the three Level 1 EDs ranged from 6817 at the Ragama Hospital to 12270 at Kalubowila Teaching Hospital. Inpatient admission rates for these patients varied widely, ranging from as low as 2.7% for the Ragama Hospital to 77.4% for the National Hospital of Sri Lanka (NHSL). At eventual disposition from the ED, a small proportion were referred to their own hospital specialist outpatient clinics (0.9%) for further follow-up or referred to other hospitals (0.8%) for further management. NHSL appeared to have the shortest average waiting times at 8 minutes for doctor consultation compared to 12 minutes at Kalubowila, a difference of only 4 minutes. Wide practice variations were noted amongst the three hospitals with regards to referrals to specialist clinics. Overall, approximately half the patients were discharged from the EDs, though the discharged rates varied from between 22.6% for NHSL to 94.6% for the Ragama Hospital.

Hospital	Total Patients at ED September 2021	Numbers admitted as Booked Elective Inpatients	Number of True Emergencies presenting to the ED	Average Wait time for Emergency Consultation (minutes)	Numbers of Emergencies Referred to Other Hospitals	Number of Emergencies Referred to own Specialist Clinics	Numbers of Emergencies Discharged from ED	Emergency Patients admitted as Inpatients	Numbers pronounced Dead on arrival at ED	Numbers who died after arriving at ED
National Hospital Of Sri Lanka	21122	9012	12110	8	0	94	2735	9375	67	14
Teaching Hospital Kalubowila	17588	5318	12270	12	54	76	6191	6025	48	12
Teaching Hospital Ragama	9145	2328	6817	9	181	103	6452	184	52	16
Total	47855	16658	31197		235	273	15378	15584	167	42

Table 1: Available Patient Statistics from Level 1 Emergency Departments, September 2021, Western Province, Sri Lanka

Level 2 Hospitals (Table 2)

2. Of the 5356 emergencies presenting to these three District Hospital EDs, the numbers requiring inpatient admission were much smaller (overall 4.8% range from 2.2% to 9.5%). However, 5.0% of their patients were referred to other hospitals, usually Level 1 hospitals, for further care and another 8.1% referred to their own hospitals' specialist outpatient clinics with follow-up arrangements. Therefore, their overall ED discharge rate was very high at 90.2%. Estimated waiting times for doctor consultation at the Level 2 EDs varied between 8 and 16 minutes.

Hospital	Total Patients at ED September 2021	Numbers admitted as Booked Inpatients	Number of True Emergencies Presenting to the ED	Average Wait time for Consultation (minutes)	Emergencies Referred to Other Hospitals	Emergencies Referred to own Specialist Clinics	Numbers of Emergencies Discharged from ED	Emergency Patients admitted as Inpatients	Numbers Dead on Arrival	Deaths after arriving at ED
District General Hospital Gampaha	4034	2586	1438	8	124	67	1283	31	38	18
District General Hospital Negambo	5483	2825	2658	16	74	62	2483	101	49	25
District General Hospital Kalutara	2367	1057	1310	8	73	303	1113	124	44	18
Total	11884	6468	5406		271	432	4879	256	131	61

Table 2: Available Patient Statistics from Level 2 Emergency Departments, September 2021, Western Province, Sri Lanka

Level 3 Hospitals (Table 3)

3. The seven EDs in this group had a total ED attendance of 15034 emergencies of whom only 2.1% (range 0.6% to 7.6%) required inpatient admission into their own hospitals. Another 4.1% were referred to higher-level hospitals. Of those discharged (overall 93.8%), another 4.3% had arrangements made within their own hospital specialist clinics for further follow up. The estimated waiting times for doctor consultation at these base hospital EDs varied between 6 and 12 minutes.

Hospital	Total Patients at ED September 2021	Numbers admitted as Booked Inpatients	Number of True Emergencies Presenting to the ED	Average Wait time for Consultation (minutes)	Emergencies Referred to Other Hospitals	Emergencies Referred to own Specialist Clinics	Numbers of Emergencies Discharged from ED	Number of Emergencies Admitted as Inpatients	Deaths on Arrival	Deaths at ED after Arrival
Base Hospital Homagama	5931	3028	2903	9	147	88	2694	62	34	15
Base Hospital Panadura	6123	2318	3805	8	94	107	3669	42	28	12
Base Hospital Avissawella	8015	3002	5013	12	147	62	4838	28	32	21
Base Hospital Kiribathgoda	864	325	539	6	32	35	466	41	51	22
Base Hospital Mirigama	498	217	281	8	18	41	249	14	23	14
Base Hospital Wathupitiwala	2473	1018	1456	12	101	97	1280	74	31	15
Base Hospital Horana	2035	998	1037	9	84	212	909	48	34	17
Total	25939	10906	15034		623	642	14105	309	233	116

Table 3: Available Patient Statistics from Level 3 Emergency Departments, September 2021, Western Province, Sri Lanka

Level 4 Hospitals (Table 4)

4. There were 25 Divisional Hospital EDs in this group with a total emergency attendance of 5830. These EDs admitted an average of 7.6% of their attendances (range 1.9% to 29.5%). Another 22.9% were referred to higher-level hospitals. Of those discharged (overall 74.1%), another 9.3% had arrangements made within their own hospital clinics for further follow up. Estimated waiting times for doctor consultation at these divisional hospital EDs varied between 7 and 25 minutes.

Hospital	Total Patients at ED September 2021	Numbers admitted as Inpatients	Number of True Emergencies in ED	Average Wait time for Consultation (minutes)	Emergencies Referred to Other Hospitals	Emergencies Referred to own Specialist Clinics	Emergencies Discharged from ED	Emergencies admitted as Inpatients	Deaths on Arrival	Deaths at ED after Arrival
Divisional Hospital Watura	711	378	333	7	292	21	274	18	12	0
Divisional Hospital Thalangama	512	370	142	8	14	23	117	11	16	6
Divisional Hospital Piliyandala	467	143	324	14	52	37	259	13	13	8
Divisional Hospital Moratuwa	603	288	315	13	24	28	280	11	11	6
Divisional Hospital Padukka	702	224	478	7	27	15	442	9	11	4
Divisional Hospital Maligawatte	231	113	118	9	8	7	104	6	23	23
Divisional Hospital Kosgama	775	301	474	14	21	32	444	9	26	11
Divisional Hospital Kandana	564	203	361	15	19	31	307	35	12	7
Divisional Hospital Divlapitiya	398	176	222	17	87	22	119	16	14	8
Divisional Hospital Dompe	814	319	495	12	124	67	319	52	21	5
Divisional Hospital Minuwangoda	375	126	249	18	67	41	156	26	9	4
Divisional Hospital Radawana	137	63	74	14	14	2	47	13	6	0
Divisional Hospital Akaragama	227	115	112	15	32	8	47	33	3	0
Divisional Hospital Ja Ela	278	123	155	12	21	32	116	18	7	1
Divisional Hospital Pamunugama	325	188	137	20	14	15	117	6	17	2
Divisional Hospital Pimbura	178	96	82	16	12	12	64	6	12	0
Divisional Hospital Mathugama	721	381	340	12	66	36	248	28	12	5
Divisional Hospital Beruwala	342	218	124	11	37	8	73	14	14	2
Divisional Hospital Darga Town	312	75	237	13	21	6	205	11	12	1
Divisional Hospital Ingiriya	267	117	150	12	24	29	118	8	11	3
Divisional Hospital Baduraliya	498	277	221	18	48	7	152	21	13	0
Divisional Hospital Bulath Singhala	472	208	264	21	86	27	141	37	18	1
Divisional Hospital Ittappana	216	113	103	25	56	5	47	17	11	0
Divisional Hospital Meegahatanna	278	115	163	15	76	14	79	8	6	0
Divisional Hospital Gonaduwa	283	126	157	23	94	16	47	16	13	1
Total	10686	4856	5830		1336	541	4322	442	323	98

Table 4: Available Patient Statistics from Level 4 Emergency Departments, September 2021, Western Province, Sri Lanka

Staffing of Emergency Departments based on workload

5. Staffing of clinical departments should be based on minimal requirements for each shift of work and also expected workload. For existing Departments, work requirements need to be spelt out so that manpower requirements based on need to cover shifts and workload can be planned. The figures covered in this study cover only the emergency patient workload requirements of these institutions. Other work requirements undertaken by the staff who man the ETUs will require other additional manpower resources, e.g. if a hospital requires its Emergency Department staff to address the needs of not only the emergency patients when they are at the ETU, but also their further needs in the hospital, such as is regularly done in Level 4 EDs, then additional staffing would need to be catered.
6. From the perspective of allocated staffing positions and actual numbers of staff in these EDs, all levels of hospitals have significant shortfalls for senior physicians, medical officers, senior nurses, other nurses and porters / health attendants. The only posts that appear to be adequately filled would be those for administrative staff.

7. However, from the perspective of requirements for emergency care, using a graduated scale from high work-intensity EDs to basic community-based primary care centres with some emergency patient load, the recommended staffing numbers based on optimal staffing ratios for these different levels of EDs is as given in Tables 5, 6 and 7.

Doctor Manpower

Senior Physicians

8. All levels of EDs currently function at very low levels of senior staffing ranging from 1 senior Physician : 16,208 patients per annum in the case of Level 2 EDs to 1:62,394 patients per annum in the case of Level 1 EDs. These are already far below the currently MOH sanctioned posts for these departments which are 1:12,974 and 1:28,797, respectively). Based on what we recommend for these two levels of public hospitals, they should be functioning at a senior physician : annual patient load ratios of 1:5,000 and 1:4,000, respectively (approximately 3.2 times the present numbers for Level 2 EDs and 15.6 times the present numbers for Level 1 EDs). Level 3 and 4 EDs should be functioning at approximately 4.3 and 5.0 times the current numbers of senior physicians, respectively. The actual numbers will need to be individualized to the ETU. The numbers reflected in the Table signify the Full-time-employee (FTE) posts that will need to be allocated purely for Emergency Room work, after taking into consideration the need of each ETU in that level of hospitals.

Manpower Category	Senior Physicians				Medical Officers			
Level of ED	Level 1	Level 2	Level 3	Level 4	Level 1	Level 2	Level 3	Level 4 ⁺
Current MOH-sanctioned posts	13	5	15	7	150	100	175	417
Sanctioned Staff:Patient Ratio[#]	1:28,797	1:12,974	1:12,007	1:9,994	1:2,496	1:648	1:1,031	1:168
Number of Staff in ED (Sep 2021)	6	4	7	2	89	46	102	142
Staff:Patient Ratio based on Current Staff Numbers	1:62,394	1:16,218	1:25,773	1:34,980	1:4,206	1:1,410	1:1,769	1:493
Estimated Annualized ED Patient Load*	374,364	64,872	180,408	69,960	374,364	64,872	180,408	69,960

Recommended Staff:Patient Ratios**	1:4,000	1:5,000	1:6,000	1:7,000	1:4,000	1:5,000	1:6,000	1:7,000
Staff Numbers Recommended*	94	4	31	25	94	14	31	25
Average Staff-Patient Ratios in similarly crowded major Western and Asian EDs##	1:2,000	1:3,000	1:4,000	1:5,000	1:2,000	1:2,500	1:3,000	1:3,500

- #These ratios are based on sanctioned numbers in relation to the estimated patients numbers seen per annum based on the Sep 2021 patient data. They may not have been the basis for the sanctioned numbers when initially determined by the Ministry of Health some years earlier
- +The numbers for Level 4 hospitals given sanctioned and posted by MOH represent the numbers for the whole hospital and not just for ER work. The numbers recommended are solely for ER work.
- * The estimated annualized ED patient load is based on the Sep 2021 census (i.e. Emergency patients presenting to the ETU in Sep 2021 x 12)
- ** These recommended ratios are based on optimal care levels suggested by the author for the different levels of ETUs
- *** The recommendation is only for the conduct of ETU functions. It does not include other duties that the hospital may require of the individual doctors, such as covering medical or surgical ward duties.

Table 5: Manpower Staffing Table – Senior Physicians and Medical Officers

9. Since it will be almost impossible to make up the numbers of senior physicians overnight, it is suggested that in the initial phase, the Ministry combines the numbers of senior physicians and medical officers for the total doctor complement. Once the emergency physicians come through the training system, the numbers of medical officers may be appropriately decreased.
10. The first batch of doctors for post-graduate training were taken in 2014. Based on the recommended training system of 4 years of local training in Sri Lanka⁽³⁾ and 1-2 years of training overseas either in Australia, New Zealand or the United Kingdom, five batches of emergency medicine post-graduate trainees, up to a total of 104 doctors would have completed the local training. Many who have gone for overseas do not return and instead find permanent jobs in those other countries. These doctors have taken paid leave from Sri Lanka to do their overseas training stints. To-date only 44 trained and practising emergency physicians have returned to practice in public institutions in Sri Lanka. Most of the doctors who go to the UK, Australia and New Zealand do not get into training posts and instead obtain jobs in small EDs that would not have the breadth of case-mix or be able to practice advanced emergency medicine in these other countries. They are a loss to the country.

Medical Officers

11. For medical officers, the current numbers available fall far short of the sanctioned posts at least for the Level 1 and 2 EDs. In these Departments, the doctors are fully posted to that ED. For the Level 3 and 4 ETUs, numbers of sanctioned posts for these hospitals reflect the overall numbers of MOs in their institutions with the doctors being rostered on some days to cover the ETU and wards and other areas of the hospital on other days. These cannot be used to comment on the current adequacy of medical officers for the ETUs. Therefore, for the Level 3 and 4 ETUs, the numbers recommended are those purely for the ED functions.

Nursing Manpower

Senior Nurses

12. There is a major shortage of Senior Nurses in the various ETUs based on current sanctioned numbers as seen in Table 6. However, the numbers sanctioned in the Level 3 and 4 ETUs are representative of the total numbers in the hospital, rather than just the ETU. Based on the ETU specific requirements, only the Level 1 ETUs may be really short of senior nursing manpower. However, the recommendations for the Level 2, 3 and 4 ETUs suggest the numbers required there and not in the whole hospital. If the overall sanctioned and holding numbers suggest otherwise, the hospitals would need to ensure that their ETUs are provided with adequate numbers of senior nurses as per the recommendations to ensure adequate quality of nursing care in these units.

Manpower Category	Senior Nurses				Nurses			
Level of ED	Level 1	Level 2	Level 3	Level 4	Level 1	Level 2	Level 3	Level 4 ⁺
Current MOH-sanctioned posts	34	25	55	190	200	120	280	945
Sanctioned Staff:Patient Ratio [#]	1:11,011	1:2,595	1:3,280	1:368	1:1,872	1:541	1:644	1:74
Number of Staff in ED (Sep 2021)	18	13	24	44	146	62	166	286
Staff:Patient Ratio based on Current Staff Numbers	1:20,798	1:4,990	1:7,517	1:1,590	1:2,564	1:1,046	1:1,087	1:245
Estimated Annualized ED Patient Load*	374,364	64,872	180,408	69,960	374,364	64,872	180,408	69,960

Recommended Staff:Patient Ratios**	1:6,000	1:7,000	1:8,000	1:9,000	1:800	1:900	1:1,000	1:1,100
Staff Numbers Recommended ***	63	1	27	25	468	73	183	74

- #These ratios are based on sanctioned numbers in relation to the estimated patients numbers seen per annum based on the Sep 2021 patient data. They may not have been the basis for the sanctioned numbers when initially determined by the Ministry of Health some years earlier
- +The numbers for Level 4 hospitals given sanctioned and posted by MOH represent the numbers for the whole hospital and not just for ER work. The numbers recommended are solely for ER work.
- * The estimated annualized ED patient load is based on the Sep 2021 census (i.e. Emergency patients presenting to the ETU in Sep 2021 x 12)
- ** These recommended ratios are based on optimal care levels suggested by the author for the different levels of ETUs
- *** The recommendation is only for the conduct of ETU functions. It does not include other duties that the hospital may require of the individual doctors, such as covering medical or surgical ward duties.

Table 6: Manpower Staffing Table – Senior Nurses and Nurses

Nurses

13. The shortage of nurse is greatest in the Level 1 ETUs which see the largest number of patients and likely the most complex ones. This is clearly noted in the 1 nurse:2,564 patients ratio in these Departments compared to the more than doubled nurse numbers in the Level 2, 3 and 4 ETUs. The recommended numbers are an attempt to correct this imbalance.

Other Manpower

Porters / Healthcare Attendants and Administrative staff

Manpower Category	Porters / Healthcare Attendants				Administrative staff			
Level of ED	Level 1	Level 2	Level 3	Level 4	Level 1	Level 2	Level 3	Level 4
Current MOH-sanctioned posts	150	96	242	796	3	3	7	25
Sanctioned Staff:Patient Ratio [#]	1:2,496	1:676	1:745	1:88	1:124,788	1:216,261	1:25,773	1:2798
Number of Staff in ED (Sep 2021)	88	50	137	297	3	3	7	25
Staff:Patient Ratio based on	1:4,254	1:1,297	1:1,317	1:236	1:124,788	1:216,261	1:25,773	1:2798

Current Staff Numbers								
Estimated Annualized ED Patient Load*	374,364	64,872	180,408	69,960	374,364	64,872	180,408	69,960
Recommended Staff:Patient Ratios**	1:1,500	1:2,000	1:2,500	1:3,000	1:40,000	1:50,000	1:60,000	1:60,000
Staff Numbers Recommended***	250	3	74	33	10	3	7	25

- [#]These ratios are based on sanctioned numbers in relation to the estimated patients numbers seen per annum based on the Sep 2021 patient data. They may not have been the basis for the sanctioned numbers when initially determined by the Ministry of Health some years earlier
- * The estimated annualized ED patient load is based on the Sep 2021 census (i.e. Emergency patients presenting to the ETU in Sep 2021 x 12)
- ** These recommended ratios are based on optimal care levels suggested by the author for the different levels of ETUs
- *** The recommendation is only for the conduct of ETU functions. It does not include other duties that the hospital may require of the individual doctors, such as covering medical or surgical ward duties.

Table 7: Manpower Staffing Table – Porters / Healthcare Attendants and Administrative Staff

Physical Facilities in the Emergency Departments (Tables 8, 9, 10, 11)

14. All Level 1 and Level 2 EDs have separate reception areas for patients, a covered ambulance porch, a distinct triage area and an area for patient registration. All reported having separate areas in their EDs for Category 1, 2, 3, and 4 patients, though none were able to specify the numbers of such categorized patients in each area. All claimed to have a separate SSW, separate minor procedure rooms, a pharmacy within 5 minutes of the ED, and separate patient and relative waiting areas. These waiting areas had a capacity for about 20 persons in each, except for the facility at Ragama which could only hold 10 persons.

Hospital	Reception Area for patients	Covered Ambulance Porch	Distinct Triage Area	Area for Patient Registration	Cat 1 Area	Cat 2 Area	Cat 3 Area	Cat 4 Area	Short Stay Ward	Procedure Room	Pharmacy within 5 minutes	Patient / Relatives Waiting Area	Seating Capacity at Waiting Area
National Hospital of Sri Lanka	1	1	1	1	1	1	1	1	1	1	1	1	20
Teaching Hospital Kalubowila	1	1	1	1	1	1	1	1	1	1	1	1	20
Teaching Hospital Ragama	1	1	1	1	1	1	1	1	1	1	1	1	10

Table 8: Physical Facilities at Level 1 Emergency Departments, Western Province, Sri Lanka

Hospital	Reception Area for patients	Covered Ambulance Porch	Distinct Triage Area	Area for Patient Registration	Cat 1 Area	Cat 2 Area	Cat 3 Area	Cat 4 Area	Short Stay Ward	Procedure Room	Pharmacy within 5 minutes	Patient / Relatives Waiting Area	Seating Capacity at Waiting Area
District General Hospital Gampaha	1	1	1	1	1	1	1	1	1	1	1	1	20
District General Hospital Negambo	1	1	1	1	1	1	1	1	1	1	1	1	20
District General Hospital Kalutara	1	1	1	1	1	1	1	1	1	1	1	1	20

Table 9: Physical Facilities at Level 2 Emergency Departments, Western Province, Sri Lanka

15. Four of the Level 3 EDs claimed to have all the physical facilities. However, their waiting areas could not hold more than 10 persons, except for the one at Wathupitiwala which could hold 20. The Homagama and Horana EDs also did not have separate waiting areas for patients and relatives.

Hospital	Reception Area for patients	Covered Ambulance Porch	Distinct Triage Area	Area for Patient Registration	Cat 1 Area	Cat 2 Area	Cat 3 Area	Cat 4 Area	Short Stay Ward	Procedure Room	Pharmacy within 5 minutes	Patient / Relatives Waiting Area	Seating Capacity at Waiting Area
Base Hospital Homagama	1	1	1	1	1	1	1	1	1	1	1	0	0
Base Hospital Panadura	1	1	1	1	1	1	1	1	1	1	1	1	10
Base Hospital Avissawella	1	1	1	1	1	1	1	1	1	1	1	1	5
Base Hospital Kiribathgoda	1	1	1	1	1	1	1	1	1	1	1	1	10
Base Hospital Mirigama	1	1	1	1	0	0	0	0	0	1	0	1	10
Base Hospital Wathupitiwala	1	1	1	1	1	1	1	1	1	1	1	1	20
Base Hospital Horana	1	1	1	1	0	0	0	0	0	1	0	0	0

Table 10: Physical Facilities at Level 3 Emergency Departments, Western Province, Sri Lanka

16. All Level 4 EDs, except for one had a separate reception area and covered ambulance porches. Level 4 healthcare institutions are small hospitals with a single Emergency Room. However, they still need to perform the triage function. Only 4 of the 25 Divisional EDs had a separate Triage area. Only one had a resuscitation room. Otherwise, all Level 4 EDs had no separate facilities for Category 1, 2, 3 or 4 patients, no observation areas, no designated procedure rooms and no separate waiting areas for patients and relatives.

Hospital	Reception Area for patients	Covered Ambulance Porch	Distinct Triage Area	Area for Patient Registration	Cat 1 Area	Cat 2 Area	Cat 3 Area	Cat 4 Area	Short Stay Ward	Procedure Room	Pharmacy within 5 minutes	Patient / Relatives Waiting Area	Seating Capacity at Waiting Area
Divisional Hospital Watara	1	1	1	1	1	0	0	0	0	0	0	0	0
Divisional Hospital Thalangama	1	1	1	1	0	0	0	0	0	0	0	0	0
Divisional Hospital Piliyandala	1	1	0	1	0	0	0	0	0	0	0	0	0
Divisional Hospital Moratuwa	1	1	0	1	0	0	0	0	0			0	0
Divisional Hospital Padukka	1	1	0	0	0	0	0	0	0	0	0	0	0
Divisional Hospital Maligawatte	1	1	0	1	0	0	0	0	0	0	0	0	0
Divisional Hospital Kosgama	1	1	0	0	0	0	0	0	0	0	0	0	0
Divisional Hospital Kandana	1	1	0	1	0	0	0	0	0	0	0	0	0
Divisional Hospital Divlapitiya	1	1	0	0	0	0	0	0	0	0	0	0	0
Divisional Hospital Dompe	1	1	1	1	0	0	0	0	0	0	0	0	0
Divisional Hospital Minuwangoda	1	1	0	0	0	0	0	0	0	0	0	0	0
Divisional Hospital Radawana	1	1	0	0	0	0	0	0	0	0	0	0	0
Divisional Hospital Akaragama	1	1	0	0	0	0	0	0	0	0	0	0	0
Divisional Hospital Ja Ela	1	1	1	1	0	0	0	0	0	0	0	0	0
Divisional Hospital Pamunugama	1	1	0	0	0	0	0	0	0	0	0	0	0
Divisional Hospital Pimbura	1	1	0	0	0	0	0	0	0	0	0	0	0
Divisional Hospital Mathugama	1	1	0	0	0	0	0	0	0	0	0	0	0
Divisional Hospital Beruwala	1	1	0	0	0	0	0	0	0	0	0	0	0
Divisional Hospital Darga Town	1	1	0	0	0	0	0	0	0	0	0	0	0
Divisional Hospital Ingiriya	1	1	0	0	0	0	0	0	0	0	0	0	0
Divisional Hospital Baduraliya	0	0	0	0	0	0	0	0	0	0	0	0	0
Divisional Hospital Bulath Singhala	1	1	0	0	0	0	0	0	0	0	0	0	0
Divisional Hospital Ittapana	1	1	0	0	0	0	0	0	0	0	0	0	0
Divisional Hospital Meegahatanna	1	1	0	0	0	0	0	0	0	0	0	0	0
Divisional Hospital Gonaduwa	1	1	0	0	0	0	0	0	0	0	0	0	0

Table 11: Physical Facilities at Level 4 Emergency Departments, Western Province, Sri Lanka

Availability of Investigative facilities

17. All Level 1 and 2 EDs have functioning X-ray facilities for their patients. While the nearest CT facility is within 20 to 45 minutes, all have access to Ultrasound as an investigative tool, though only one (NHSL) has its own ultrasound machines. ECG is also immediately available to all Level 1 and 2 EDs. Only 6 out of 7 Level 3 EDs and 4 out of 25 Level 4 EDs had a functioning X-Ray facility and access to a CT facility within 45 – 120 minutes, though usually shorter for Level 3 facilities. While 5 out of 7 Level 3 EDs have access to ultrasound, only one Divisional ED has such access. While 5 Base Hospital EDs have an ECG facility, only 5 out of 25 Divisional EDs are able to get one at short notice.

Hospital	Functioning Xray facility	Xray room with Pb line or RC wall	How many Xray tubes	How many minutes nearest CT facility (minutes)	US available	US machines	ECG immediately available
National Hospital of Sri Lanka	Yes	Yes	1	20	Yes	3	Yes
Teaching Hospital Kalubowila	Yes	Yes	0	45	Yes	No	Yes
Teaching Hospital Ragama	Yes	No	1	20	Yes	No	Yes

Table 12: Imaging and ECG Facilities, Level 1 Emergency Departments, Western Province, Sri Lanka

Hospital	Functioning Xray facility	Xray room with Pb line or RC wall	How many Xray tubes	How many minutes nearest CT facility (minutes)	US available	US machines	ECG immediately available
District General Hospital Gampaha	Yes	No	1	30 minutes	Yes	0	Yes
District General Hospital Negambo	Yes	No	1	30	Yes	0	Yes
District General Hospital Kalutara	Yes	No	1	20	Yes	0	Yes

Table 13: Imaging and ECG Facilities, Level 2 Emergency Departments, Western Province, Sri Lanka

Hospital	Functioning Xray facility	Xray room with Pb line or RC wall	How many Xray tubes	How many minutes nearest CT facility (minutes)	US available	US machines	ECG immediately available
Base Hospital Homagama	Yes	Yes	1	45	Yes	0	Yes
Base Hospital Panadura	Yes	0	1	60 minutes	Yes	1	Yes
Base Hospital Avissawella	Yes	Yes	1	60	Yes	0	Yes
Base Hospital Kiribathgoda	Yes	No	0	60 minutes	Yes	0	Yes
Base Hospital Mirigama	No	No	0	60 minutes	No	0	Yes
Base Hospital Wathupitiwala	Yes	0	1	60 minutes	Yes	0	Yes
Base Hospital Horana	Yes	Yes	0	60 minutes	No	0	No

Table 14: Imaging and ECG Facilities, Level 3 Emergency Departments, Western Province, Sri Lanka

Hospital	Functioning Xray facility	Xray room with Pb line or RC wall	How many Xray tubes	How many minutes nearest CT facility (minutes)	US available	US machines	ECG immediately available
Divisional Hospital Watura	No	No		90 minutes	Yes	No	Yes
Divisional Hospital Thalangama	No	Yes	NR	60 minutes	No	No	Yes
Divisional Hospital Piliyandala	Yes	Yes		90 minutes	No	No	Yes
Divisional Hospital Moratuwa	Yes	Yes		90 minutes	No	Yes	No
Divisional Hospital Padukka	No	Yes	1	60 minutes	No	No	Yes
Divisional Hospital Maligawatte	Yes	Yes	1	45	No	No	Yes
Divisional Hospital Kosgama	Yes	No	1	60 minutes	No	No	No
Divisional Hospital Kandana	No	No		60 minutes	No	No	No
Divisional Hospital Divlapitiya	No	No	0	60 minutes	No	No	No
Divisional Hospital Dompe	No	No	NR	60 minutes	No	No	No
Divisional Hospital Minuwangoda	No	No		60 minutes	No	No	No
Divisional Hospital Radawana	No	No	0	60 minutes	No	No	No
Divisional Hospital Akaragama	No	No	NR	60 minutes	No	No	No
Divisional Hospital Ja Ela	No	No		60 minutes	No	No	No
Divisional Hospital Pamunugama	No	No	0	120 minutes	No	No	No
Divisional Hospital Pimbura	No	Yes		60 minutes	No	No	No
Divisional Hospital Mathugama	No	Yes		60 minutes	No	No	No
Divisional Hospital Beruwala	No	Yes	0	60	No	No	No
Divisional Hospital Darga Town	No	Yes	0	120	No	No	No
Divisional Hospital Ingiriya	No	Yes	0	90 minutes	No	No	No
Divisional Hospital Baduraliya	No	No	0	120 minutes	No	No	No
Divisional Hospital Bulath Singhala	No	No	0	120 minutes	No	No	No
Divisional Hospital Ittapana	No	No	0	120 minutes	No	No	No
Divisional Hospital Meegahatanna	No	No		120 minutes	No	No	No
Divisional Hospital Gonaduwa	No	No	NR	120 minutes	No	No	No

Table 15: Imaging and ECG Facilities, Level 4 Emergency Departments, Western Province, Sri Lanka

18. Laboratory investigative facilities are also not universally available. Level 1 EDs have access to haematology, biochemistry (including renal panel, blood sugar and troponins), arterial blood gases and urine dipstix and urine pregnancy tests. Two Level 2 EDs and two level 3 EDs have some difficulties for a few of these tests. For Level 4 EDs, about 70% have access to biochemical lab tests, especially renal panel and blood sugar. However, most other tests are not available to Divisional EDs.

Hospital	Haematology Blood Tests available	Biochemical blood tests available	Coagulation Blood Tests available	GXM available	Toxicology tests available	Blood Cultures available	Blood sugar available	Blood Gas Analysis available	Troponins Available	Other Blood tests available	Urine Dipstix available	Urine Pregnancy test available	Other Urine tests available
National Hospital of Sri Lanka	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	No
Teaching Hospital Kalubowila	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	No
Teaching Hospital Ragama	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No	Yes	Yes	No

Table 16: Laboratory Facilities at Level 1 Emergency Departments, Western Province, Sri Lanka

Hospital	Haematology Blood Tests	Biochemical blood tests	Coagulation Blood Tests	GXM	Toxicology tests	Blood Cultures	Blood sugar	Blood Gas Analysis	Troponins	Other Blood tests	Urine Dipstix	Urine Pregnancy test	Other Urine tests
District General Hospital Gampaha	No	Yes	No	No	No	No	Yes	Yes	Yes	No	Yes	Yes	No
District General Hospital Negambo	Yes	Yes	No	No	No	No	Yes	Yes	Yes	No	Yes	Yes	No
District General Hospital Kalutara	Yes	Yes	No	No	No	No	Yes	Yes	No	No	Yes	Yes	No

Table 17: Laboratory Facilities at Level 2 Emergency Departments, Western Province, Sri Lanka

Hospital	Haematology Blood Tests	Biochemical blood tests	Coagulation Blood Tests	GXM	Toxicology tests	Blood Cultures	Blood sugar	Blood Gas Analysis	Troponins	Other Blood tests	Urine Dipstix	Urine Pregnancy test	Other Urine tests
Base Hospital Homagama	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	No
Base Hospital Panadura	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes	No	Yes	Yes	No
Base Hospital Avissawella	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes	No	Yes	Yes	No
Base Hospital Kiribathgoda	Yes	Yes	No	No	No	No	Yes	Yes	Yes	No	Yes	Yes	No
Base Hospital Mirigama	No	Yes	No	No	No	No	Yes	No	No	No	Yes	Yes	No
Base Hospital Wathupitiwala	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	No	Yes	Yes	No
Base Hospital Horana	No	Yes	No	No	No	No	Yes	No	No	No	No	Yes	No

Table 18: Laboratory Facilities at Level 3 Emergency Departments, Western Province, Sri Lanka

Hospital	Haematology Blood Tests	Biochemical blood tests	Coagulation Blood Tests	GXM	Toxicology tests	Blood Cultures	Blood sugar	Blood Gas Analysis	Troponins	Other Blood tests	Urine Dipstix	Urine Pregnancy test	Other Urine tests
Divisional Hospital Watura	No	No	No	No	No	No	No	No	Yes	No	No	No	No
Divisional Hospital Thalangama	No	Yes	No	No	No	No	Yes	No	No	No	No	Yes	No
Divisional Hospital Piliyandala	No	Yes	No	No	No	No	Yes	No	Yes	No	No	No	No
Divisional Hospital Moratuwa	No	Yes	No	No	No	No	Yes	No	Yes	No	No	No	No
Divisional Hospital Padukka	No	Yes	No	No	No	No	Yes	No	No	No	No	No	No
Divisional Hospital Maligawatte	No	Yes	No	No	No	No	No	No	No	No	No	No	No
Divisional Hospital Kosgama	No	No	No	No	No	No	No	No	No	No	No	No	No
Divisional Hospital Kandana	No	Yes	No	No	No	No	Yes	No	No	No	No	Yes	No
Divisional Hospital Divlapitiya	No	Yes	No	No	No	No	Yes	No	No	No	No	Yes	No
Divisional Hospital Dompe	No	Yes	No	No	No	No	Yes	No	No	No	No	Yes	No
Divisional Hospital Minuwangoda	No	Yes	No	No	No	No	Yes	No	No	No	No	Yes	No
Divisional Hospital Radawana	No	No	No	No	No	No	No	No	No	No	No	Yes	No
Divisional Hospital Akaragama	No	Yes	No	No	No	No	No	No	No	No	No	Yes	No
Divisional Hospital Ja Ela	No	Yes	No	No	No	No	Yes	No	No	No	No	Yes	No
Divisional Hospital Pamunugama	No	Yes	No	No	No	No	Yes	No	No	No	No	Yes	No
Divisional Hospital Pimbura	No	Yes	No	No	No	No	Yes	No	No	No	Yes	Yes	No
Divisional Hospital Mathugama	No	No	No	No	No	No	No	No	No	No	No	No	No
Divisional Hospital Beruwala	No	No	No	No	No	No	No	No	No	No	No	No	No
Divisional Hospital Darga Town	Yes	Yes	Yes	No	No	No	No	No	No	No	No	Yes	No
Divisional Hospital Ingiriya	No	Yes	No	No	No	No	Yes	No	No	No	No	No	No
Divisional Hospital Baduraliya	No	Yes	No	No	No	No	Yes	No	No	No	No	Yes	No
Divisional Hospital Bulath Singhala	No	Yes	No	No	No	No	Yes	No	No	No	No	Yes	No
Divisional Hospital Ittapana	No	No	No	No	No	No	Yes	No	No	No	No	Yes	No
Divisional Hospital Meegahatanna	No	Yes	No	No	No	No	Yes	No	No	No	No	Yes	No
Divisional Hospital Gonaduwa	No	Yes	No	No	No	No	Yes	No	No	No	No	Yes	No

Table 19: Laboratory Facilities at Level 4 Emergency Departments, Western Province, Sri Lanka

Discussion

Are there gaps in the resources that Emergency Departments have?

The national guidelines for Emergency Departments for Sri Lanka specify that the same triage guidelines and standards should apply to all EDs regardless of which level of hospital they serve. However, none of the hospitals were able to provide information of the numbers of patients in their departments by triage category. A random perusal of case notes from the EDs reveals that triage categorization is not mentioned in any of these notes, including in the triage note by the nurses. Therefore, the discipline with which triage is implemented at EDs in the province, at least, is suspect. What is known is that there has not been any audit of ED cases over the last six years to check on the conduct of triage and triage categorization.

Triage categorization should result in a patient being taken to the appropriate area of the ED where patients of similar acuity are seen^(2, 3). The resources needed to treat patients would vary depending on the clinical acuity as demonstrated by triage classification. Knowing an EDs case-mix based on triage classification allows one to plan for appropriate resource allocation. Even for a particular level of hospital, resources required by different EDs can vary significantly. Therefore, clear documentation of triage classification is important and allocation of patients to specific areas in an ED by triage classification allows for appropriate resource allocation within the Department. However, classification can be manipulated for individual ED gain. This is when a system of random audits conducted by a central health authority will better allow compliance by the various hospitals to national guidelines.

The practice of managing all hospital admissions, whether booked elective admissions or emergency admissions, would mean having the ED accommodate both patient groups and their relatives. In Sri Lanka's Western Province, the proportion of booked admissions admitted through the ED constitutes 34 to 55% of total patient load. This also means that 34 – 55% of patients and their relatives waiting at the ED are booked patients waiting for a bed, taking up ED nursing and portering resources and significantly contributing to the overcrowding in the EDs. In many jurisdictions around the world, elective admissions are not brought to the ED⁽⁴⁾. Rather a separate process would be in place whereby an admissions office that functions from a different area of the hospital manages booked admissions. There will be a need for the state to reconsider the current MOH guideline that "All admissions to the hospital shall be through the A & E unit"⁽¹⁾. It contributes to overcrowding, uses significant scarce ED resources that are especially catered for emergency patients and that therefore compromises the care that emergency patients receive.

The physical infrastructure facilities at the various EDs are unequal and do not appear to be commensurate with patient load. There is a need for the state to understand the case mix of the various EDs and plan for refurbishing the various ETUs in the state over a defined time period to meet the patient load requirements. The MOH Guidelines for A&E Departments (2016) provided type plans for different levels of EDs that have not yet been implemented. However, these plans did not allow for separate areas for the different categories of triaged patients. A review of these plans would be required to allow EDs

to implement the necessary physical changes through a process of appropriate renovations to allow each ED to manage their workload at least for the next 10 years. It would be unreasonable to have a state document that specifies what resources each type of ED should have without understanding the case-mix that comes to each ED and not having the state build up each ED with the appropriate physical resources to hold the resources and manage the workload. The redesign of the EDs will also need to address patient flow, infection control, patient numbers and patient care processes.

All EDs are short of critical manpower, especially doctors, nurses and porters / healthcare assistants. The numbers allocated to Level 1 and 2 hospitals are not commensurate with their patient load. Of course, a more accurate determination of manpower needs can be made if the case mix in each ED is known in detail (i.e. by triage type). MOH can use these more accurate figures to allocate budgeted positions to each ED, including the Level 3 and 4 EDs, rather than these hospitals simply rostering relatively untrained junior doctors to see some of the most ill patients in these hospitals at these lower level EDs. Moving to a workload-based system of allocating manpower rather than having a fixed manpower structure in the EDs would better ensure fairness in critical manpower resource allocations and in budgeting for these posts. Emergency Departments are best managed by appropriately-trained Emergency Physicians. There will be a need for the state to determine the numbers of such physicians required and ramp up the system of training these persons within a pre-determined time-frame. The current system of having each of these officers spend 1-2 years in either the UK or Australia when there is no clear local monitoring of training targets or supervision of quality of the training received is very expensive and should be reviewed. This is an area that the Post-graduate Institute for Medicine needs to pay attention to.

Again, there is no uniformity in availability of imaging and laboratory facilities to the different levels of EDs. Having these available, updating these requirements regularly, at least every five years, would better ensure that care provided is more equitable. Wise use of investigative resources and prevention of wastage is important. This is where good leadership by senior physicians, especially by trained Emergency Physicians, over the years, will pay dividends.

Summary of Gaps Identified in Infrastructural Resources

Summarizing the above findings, the gaps identified for infrastructural resources were:

- Lack of triage categorization, triage documentation and knowledge of ED case-mix by triage category
- Lack of documentation of critical timings for patient care in the ED with resulting lack of knowledge of status of patient flow through the ED. There is also resulting lack of data on time-based operational quality indices in EDs in Sri Lanka
- Having booked elective admissions coming to the ED for processing of their admissions and waiting for the inpatient bed adds to the overcrowding that occurs in the ED and the adverse consequences this has on patient care.

- Relative lack of appropriate physical infrastructural facilities at most EDs in the Western province that are not commensurate with patient load and national guidelines on A&E services.
- Significant shortage of critical professional staff, especially doctors, nurses and porters in most EDs compromises the speed and quality of care EDs are able to provide
- Lack of uniformity in availability of imaging and laboratory facilities to the different levels of EDs
- Significant variability in quality of documentation in ED medical records

Recommendations

The following recommendations are suggestions to address the gaps in the areas identified.

Triaging patients at the Emergency Departments

Beyond the above minimum standards, Emergency Departments may wish to decide whether they would wish to do more for the patient at triage, e.g. have a triage team consisting of senior doctor and two nurses who would obtain a very quick history, vital signs and a focused physical examination based on the chief complaints. The doctor would then order the essential basic and critical investigations and / or instruct on the initial care to be provided, such as administration of analgesic, nebulization or any other critical medication. The nurses would immediately carry out these instructions. All of the above would be documented in the clinical case notes promptly before the patient is transferred to the next appropriate care area (either Priority 1, 2, 3 or 4). Naturally, there should also be porters to help move the patient.

To ensure reliability of the triage process by the ED nurses, courses in triage need to be conducted. All ED nurses should be made to undergo these courses so that their triage categorization is reliable.

Since implementation of triage categorization does not appear to have occurred, even eight years after these criteria were first promulgated, it would be an opportune time to conduct a review of these criteria. Some of the senior emergency physicians and senior emergency nurses in the state may be involved in this review process so that they take ownership of the process and its subsequent implementation.

Every ED must know the numbers of Category 1, 2, 3 and 4 patients they see on a monthly or annual basis. The EDs need to take ownership of these numbers and the waiting times for each of these categories of patients.

To ensure compliance with National Triage criteria, there should be conduct of audits of the triage process by the state or provincial health authority. These audits should form the basis for resource allocations to the various EDs and annual adjustments to these.

Processing of Booked admissions and emergency admissions

Overcrowding of Emergency Departments is a world-wide problem. The adverse effects of ED overcrowding are many. Getting elective, booked admission patients into the ED adds on to the numbers of patients and uses scarce resources meant for emergency use thereby increasing the overcrowding that occurs. Most hospitals around the world have separated the patient flow systems for booked admissions

and emergency admissions so that they do not compete for the same process resources⁽⁵⁾. Booked admissions can be better managed with a separate system of patient flow that avoids the use of Emergency Department resources and thereby decreases the impact on ED overcrowding. It is important, from a patient safety perspective, that a separate admissions system for booked admissions be institutionalized in Sri Lanka and implemented across the island.

Physical infrastructure facilities at EDs

Cabinet Memorandum No 15/0586/616/022, an Accident & Emergency Care Policy document for Sri Lanka, dated 19th March 2015 and approved by the Cabinet of Ministers of Democratic Socialist Republic of Sri Lanka on 22nd April 2015 listed the improvement of physical facilities at EDs across the island from as early as 2014. This has yet to be implemented. The current evaluation of EDs in the Western province demonstrates the gap between what currently exists and what should have been, if the resources as identified in the A&E policy of 2016 had been provided. A new time-table is required with a detailed implementation plan, sources of funding and identified completion dates for physical infrastructural facilities in all EDs in the country.

Critical Manpower shortages at EDs

Critical manpower shortfalls exist in key vocational groups, especially doctors and nurses at EDs in all levels of care.

The numbers needed to provide the desired level of care can be determined through application of the ratios for the different levels of care and current patient load data.

The post-graduate training program to train specialist emergency physicians⁽⁶⁾ needs to be enhanced to produce the desired numbers within a ten-year time-frame. The numbers required will need to be reviewed after the first five year period.

Short, packed training programs will need to be conducted to introduce specific protocols of care that may be implemented at Level 3 and Level 4 hospitals.

This may be complemented with telemedicine services provided by trained emergency medicine physicians at Level 1 hospitals to assist doctors at level 3 and 4 hospitals' ETUs manage specific emergencies. This is with the knowledge that such senior doctors, will be taken away from their service duties while providing such advice and this may impact the level of services provided by these Level 1 EDs.

There is also the need for a continuing medical education program for all ED Medical Officers in Sri Lanka that covers the breadth of emergencies encountered in clinical practice in the country

Similarly, there is also the need to build up a trained cadre of emergency nurses in the country. The program for this should be done in parallel with the training of doctors. The appropriate nurse training institutions should be involved in implementing these programs.

Availability of basic Imaging and Laboratory facilities at EDs

Ensuring availability of basic investigative facilities at all EDs in Western province of Sri Lanka will allow the provision of basic standard of care at these facilities with a lesser need to transfer the patient to a higher level facility and thus less delay in definitive care. The implementation of this change should be done concurrently with the upgrading of physical infrastructural facilities referred to in para 4 above.

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