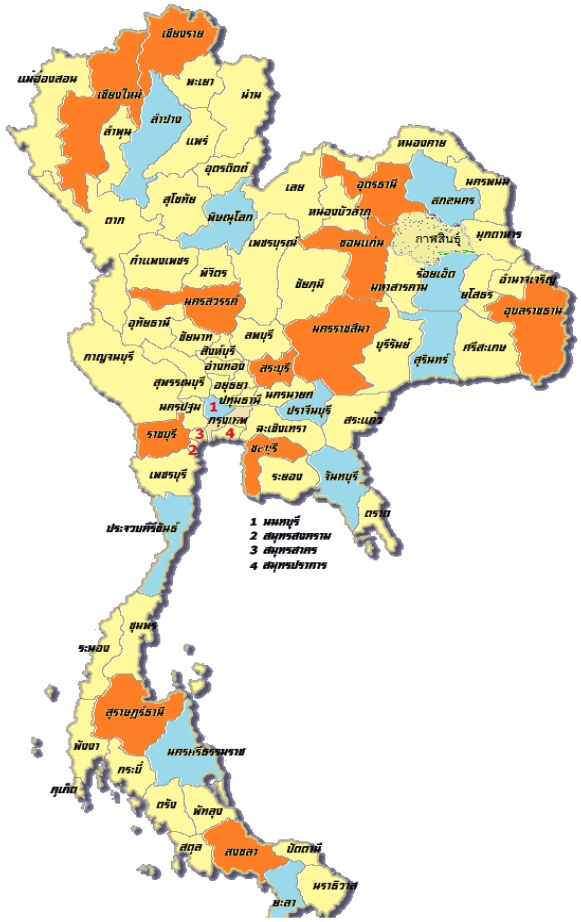


Trauma center level 1

Trauma center level 2

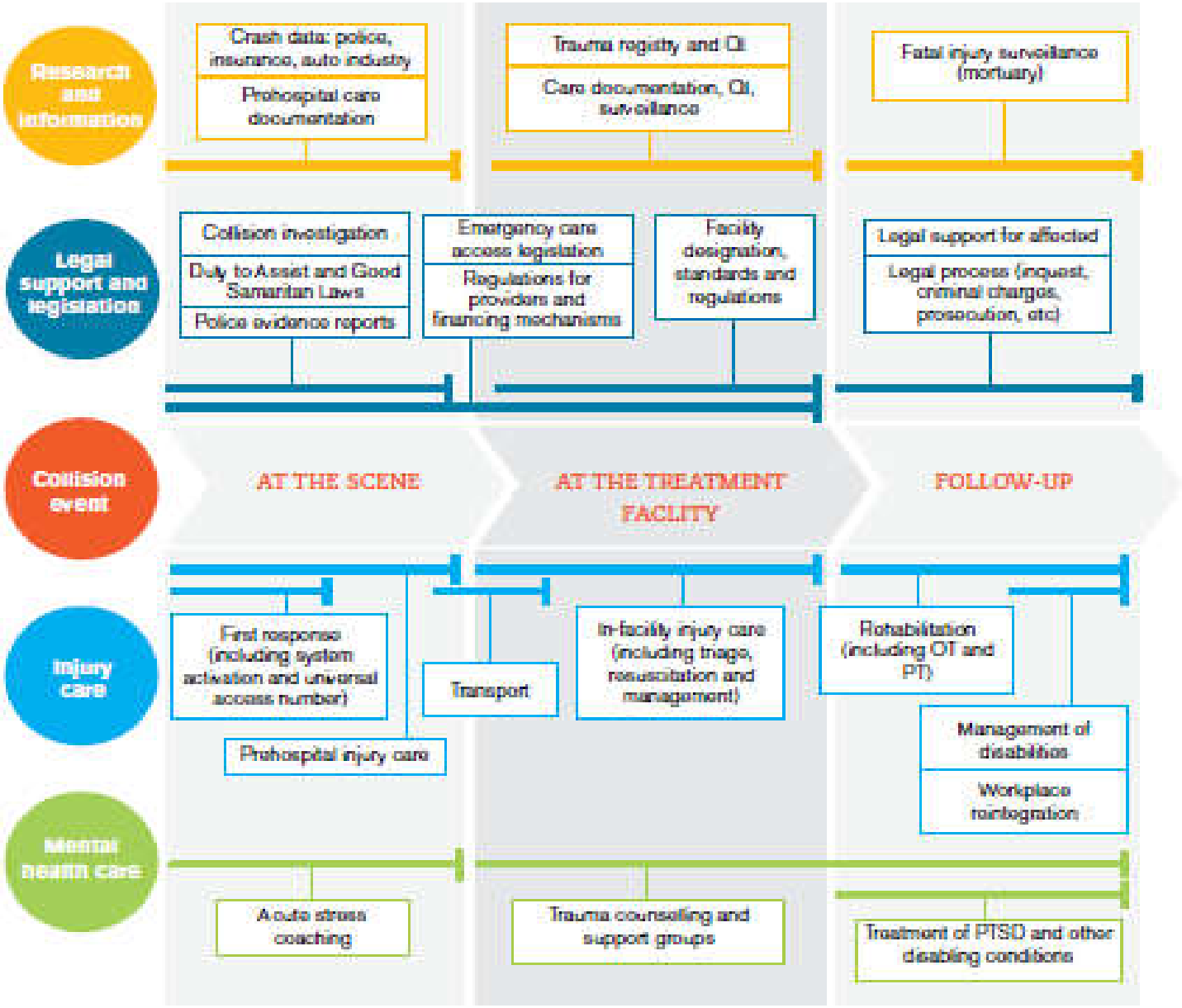
Trauma center level 3

Roles and Responsibility of TMD

Witaya Chadbunchachai M.D.,FRCST

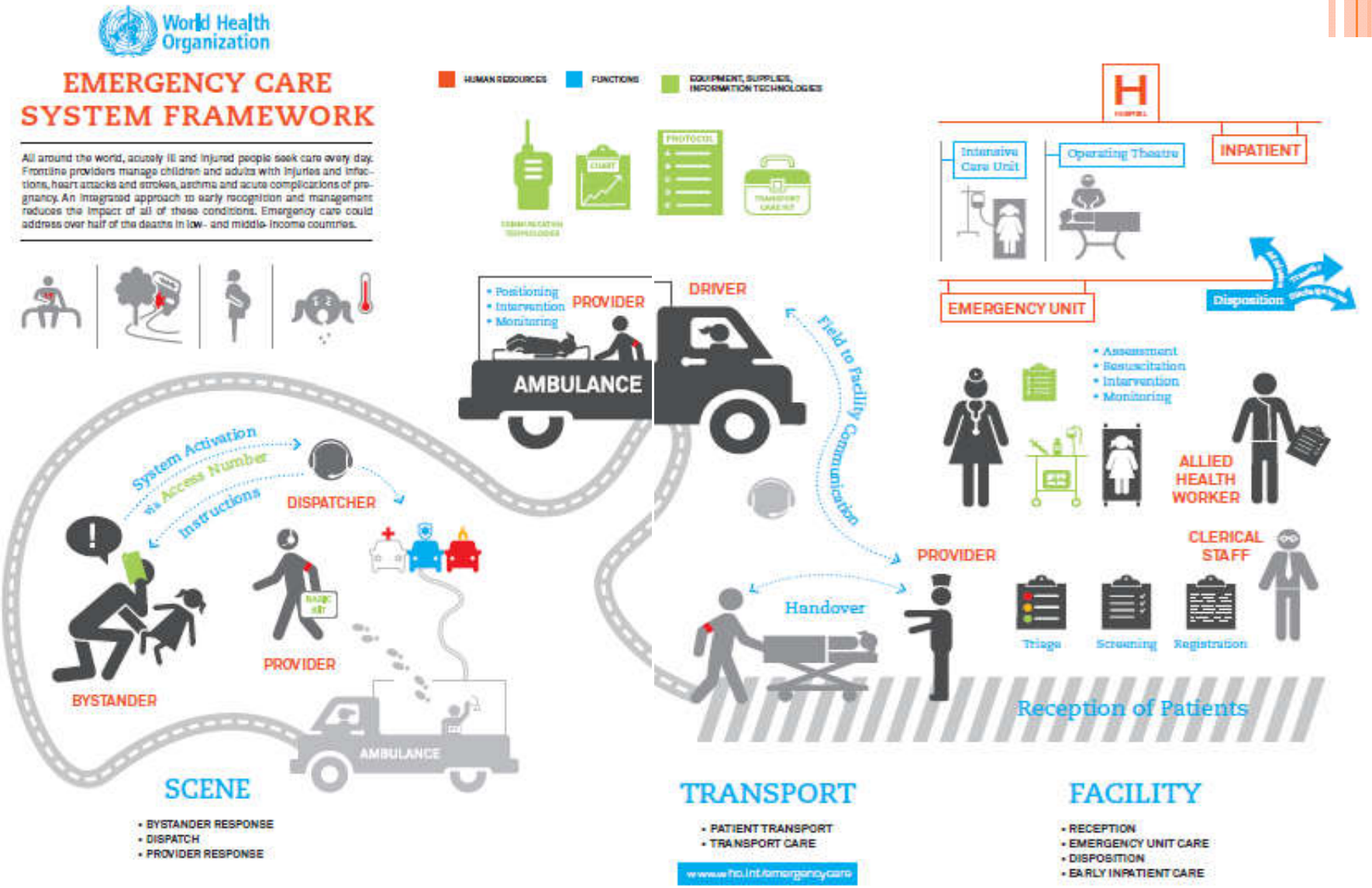
WHO expert advisory panel for injury and violence prevention

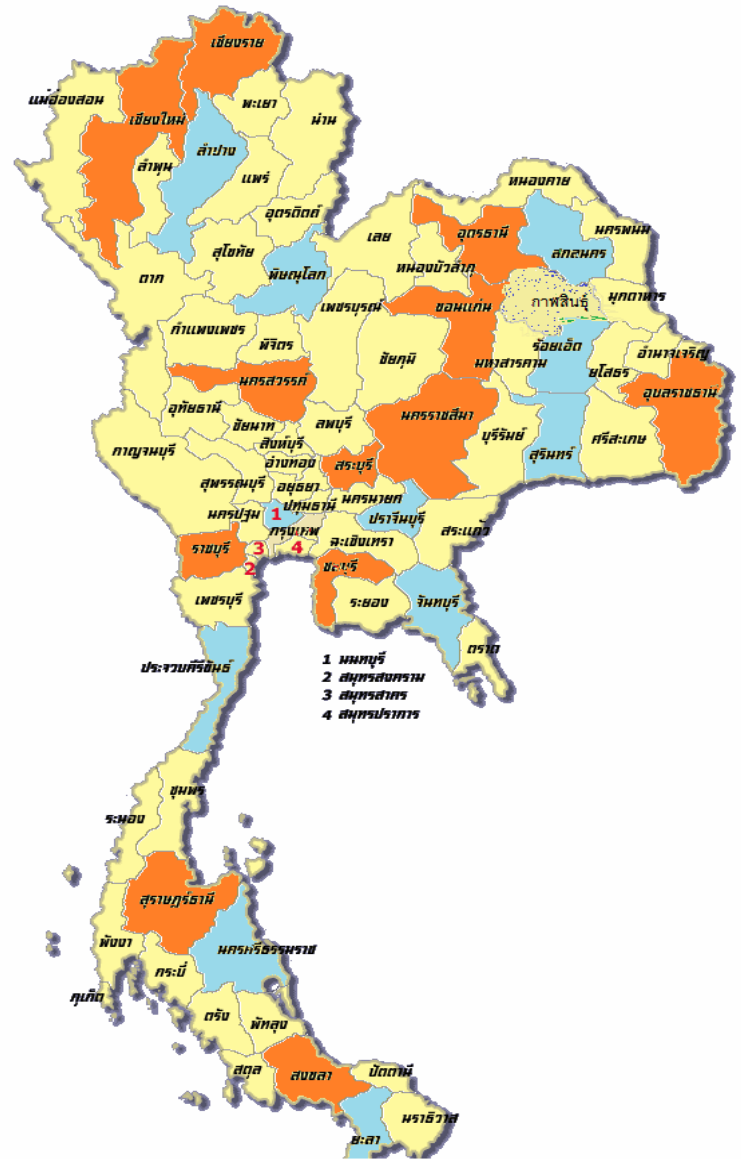
FIGURE 2. KEY COMPONENTS OF THE POST-CRASH RESPONSE



QI = Quality Improvement; PT = Physiotherapy; OT = Occupational Therapy

Figure 2.5
Trauma care





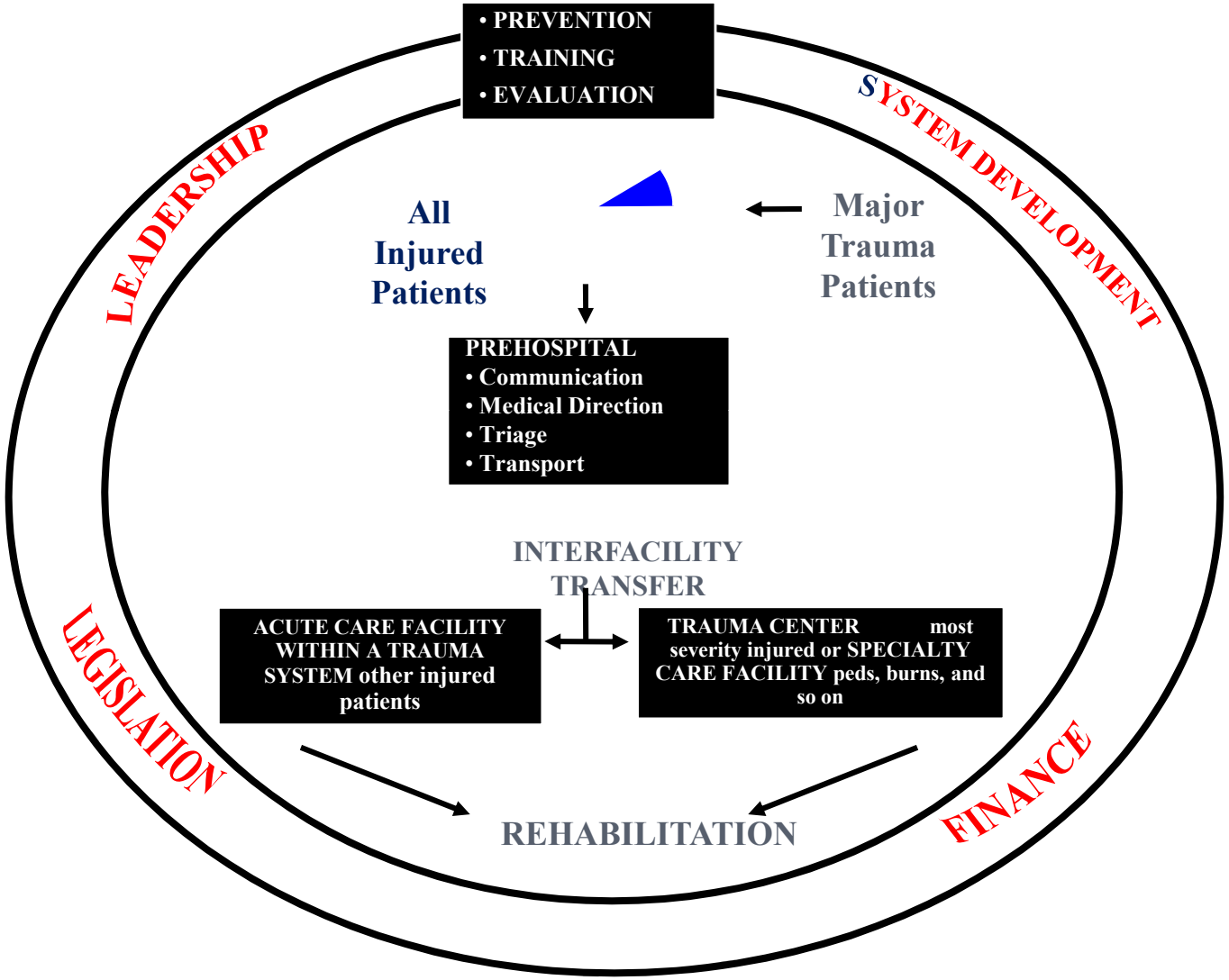
Trauma center level 1

Trauma center level 2

Trauma center level 3

Responsibility plan of TCC

DEVELOPMENT FRAME : AN INCLUSIVE TRAUMA CARE SYSTEM



Health Resources and Services Administration, U.S. Department of Health and Human Services, Rockville, MD, 1992

MOPH policy in Trauma and Emergency Care 2019

Target: mortality rate from road traffic injury = 23.2:100,000 population

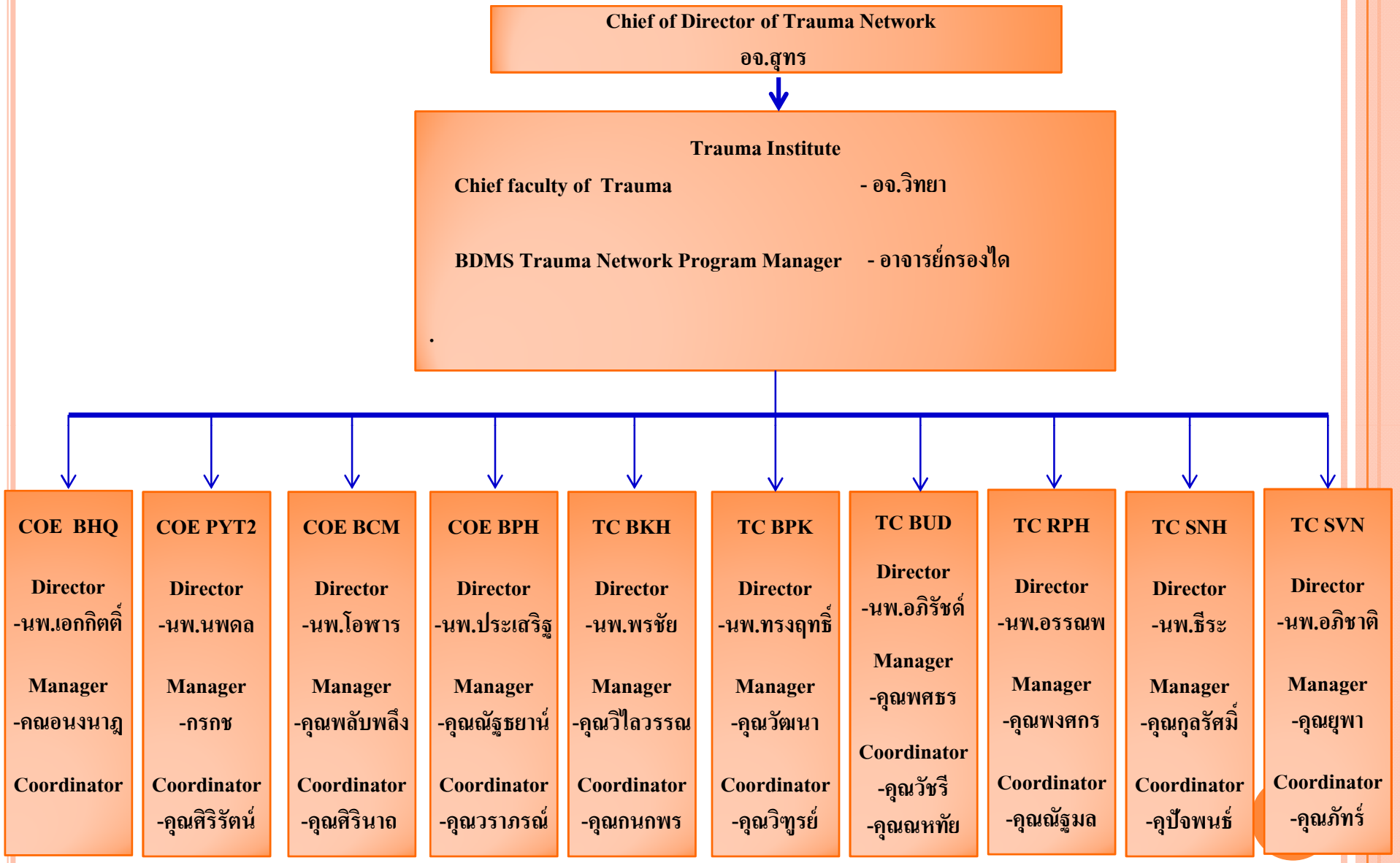
Administration
1. EOC
2. TEA unit in every provincial hospital
3. Engage in RS committee
4. District RTI

Data system
1. Integration of dead data from 3 sources
2. IS online in every provincial hospital
3. Collect data on black spot
4. RTA investigation

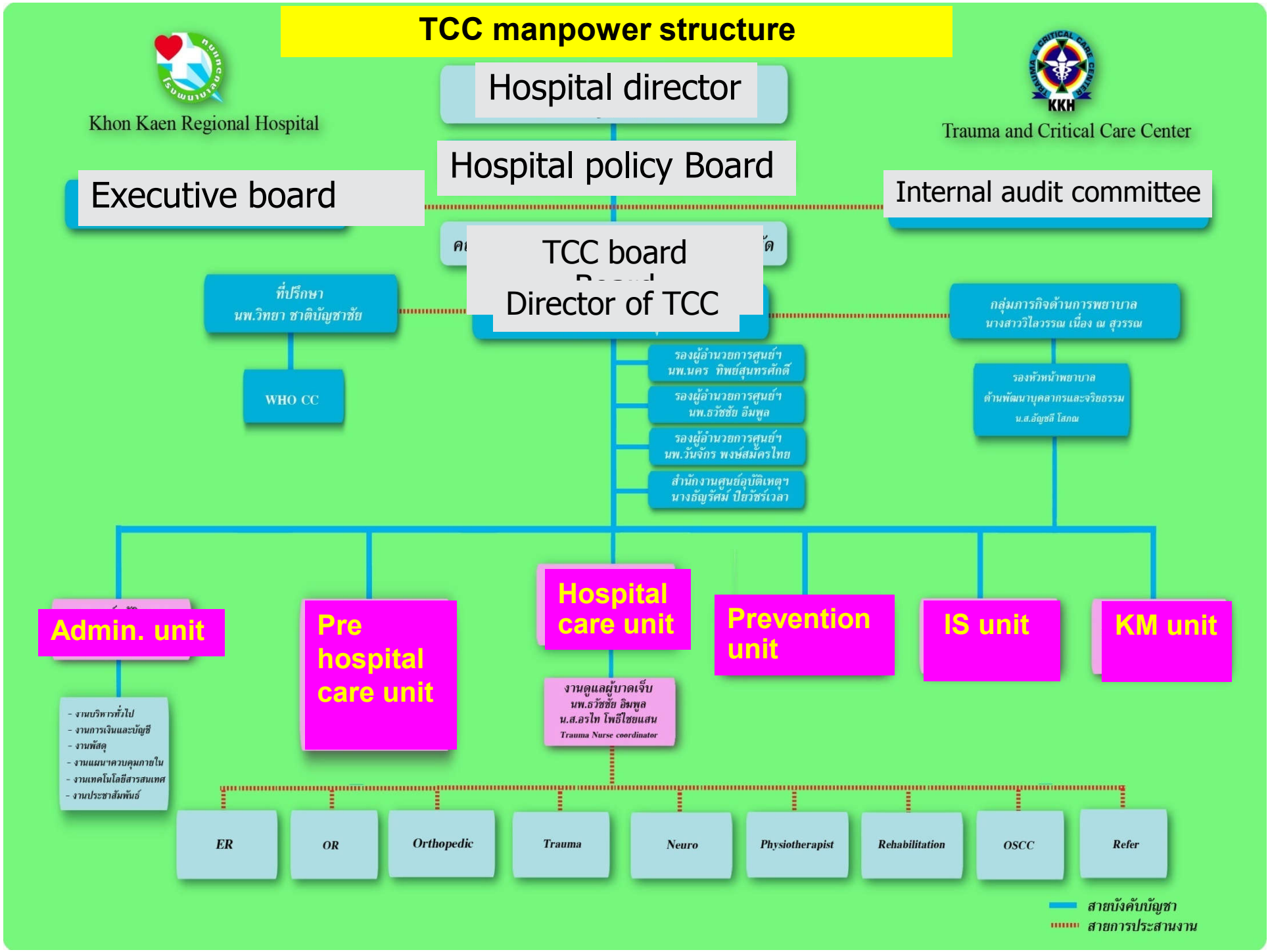
Prevention
1. Organization enforcement
2. Community road safety
3. Ambulance safety
4. RTI officer

TEC care
1. Quality EMS
2. Quality ER
3. Quality IPD
4. Quality Referral

BDMS Trauma Networking Organization Chart



TC Administration = Trauma Center Administration
Staff of TC = Trauma Director ,Trauma Manager ,Trauma coordinator (include collect data of Trauma registry)


TCC manpower structure
Khon Kaen Regional Hospital
Trauma and Critical Care Center
KKH
Hospital director
Hospital policy Board
Executive board
Internal audit committee
TCC board
Director of TCC
ที่ปรึกษา
นพ.วิทยา ชาติบัญชาชัย
WHO CC
รองผู้อำนวยการศูนย์ฯ
นพ.นคร ทิพย์สุนทรศักดิ์
รองผู้อำนวยการศูนย์ฯ
นพ.ธวัชชัย อึมพูล
รองผู้อำนวยการศูนย์ฯ
นพ.วันจักร พงษ์สมัครไทย
สำนักงานศูนย์อุบัติเหตุฯ
นางธัญรัศม์ ปิยวัชร์เวลา
กลุ่มภารกิจด้านการพยาบาล
นางสาววิไลวรรณ เนื่อง ณ สุวรรณ
รองหัวหน้าพยาบาล
ด้านพัฒนาบุคลากรและจริยธรรม
น.ส.อัญชลี โสภณ
Admin. unit
Pre hospital care unit
Hospital care unit
Prevention unit
IS unit
KM unit
- งานบริหารทั่วไป
- งานการเงินและบัญชี
- งานพัสดุ
- งานแผนฯควบคุมภายใน
- งานเทคโนโลยีสารสนเทศ
- งานประชาสัมพันธ์
งานดูแลผู้บาดเจ็บ
นพ.ธวัชชัย อึมพูล
น.ส.อรไท โพธิไชยแสน
Trauma Nurse coordinator
ER
OR
Orthopedic
Trauma
Neuro
Physiotherapist
Rehabilitation
OSCC
Refer
สายบังคับบัญชา
สายการประสานงาน

ROLES OF TMD

- Clinical care with trauma director
  - multidisciplinary teams
  - multiple areas
  - multiple stati
- Quality a ent
- I
- ersonnel and organization capacity building
- Research
- Other administrative issue

This need to change mind set of the person to have much broader role

Responsibility of TMD

Specification : General surgeon, Full time,
ATLS Trained

Responsibility:

1. Designing the policy & direction of TCS
2. Establishing trauma committee
3. Establishing the 1-3-5 years action plan
4. Establishing trauma KPI
5. Establishing Trauma algorithm
6. Establishing Trauma registry
7. Working with TNC to Implement the action plan
8. Leading TQI program

RESPONSIBILITY OF TMD

Responsibility:

7. Establishing multidisciplinary trauma round
8. Planning & implementing personnel capacity building
9. Promoting and supporting trauma research
10. Establishing traffic injury prevention in and outside hospital
11. Establishing M & E program
12. Planning Proposing Supplying budget to run the center
13. Establishing happy life happy work place environment
14. Summary and Reporting the activities

- Important mindset

We are not superman

Don’t be over confidence

Critically injured patients need multidisciplinary trauma care team , not only clinical but also non clinical-social

We have to have confident with the ability of the member in the team

Capacity can be raised

We have to listen to the idea of our team

- Impact of Multidisciplinary team approach

reduce morbidity

reduce mortality

reduce risk

reduce prosecution

standardize single protocol , single standard for the referral

increase the reputation of the institute

increase the value and proudness of the personnel and institute


พี่อ้าย
น้องน้อย

EMS day: monthly meeting of EMS network in Khon Kaen Province since 2003:
Key success factor for quality and sustainable development

RTI committee

Provincial
head department

Regular meeting among stakeholder

Provincial Health board

EMS day and TEC committee

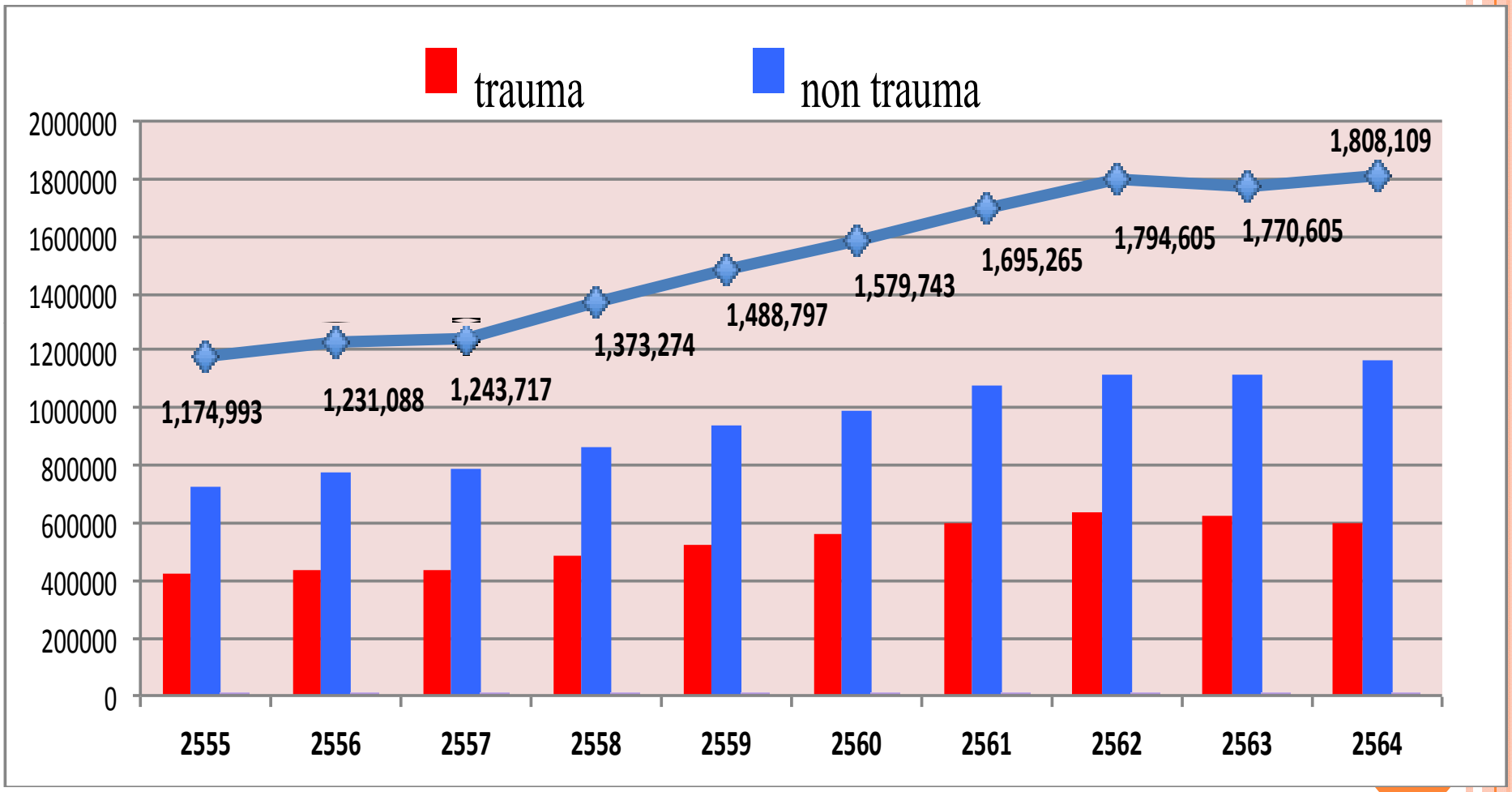
- What component should be covered in the trauma system planning ?

The content in the TEC strategies & plan should cover

- 1. Safety
- 2. Coverage
- 3. Accessibility
- 4. Efficiency
- 5. Quality

Safety

NUMBER OF AMBULANCE MISSION : 2012-2021



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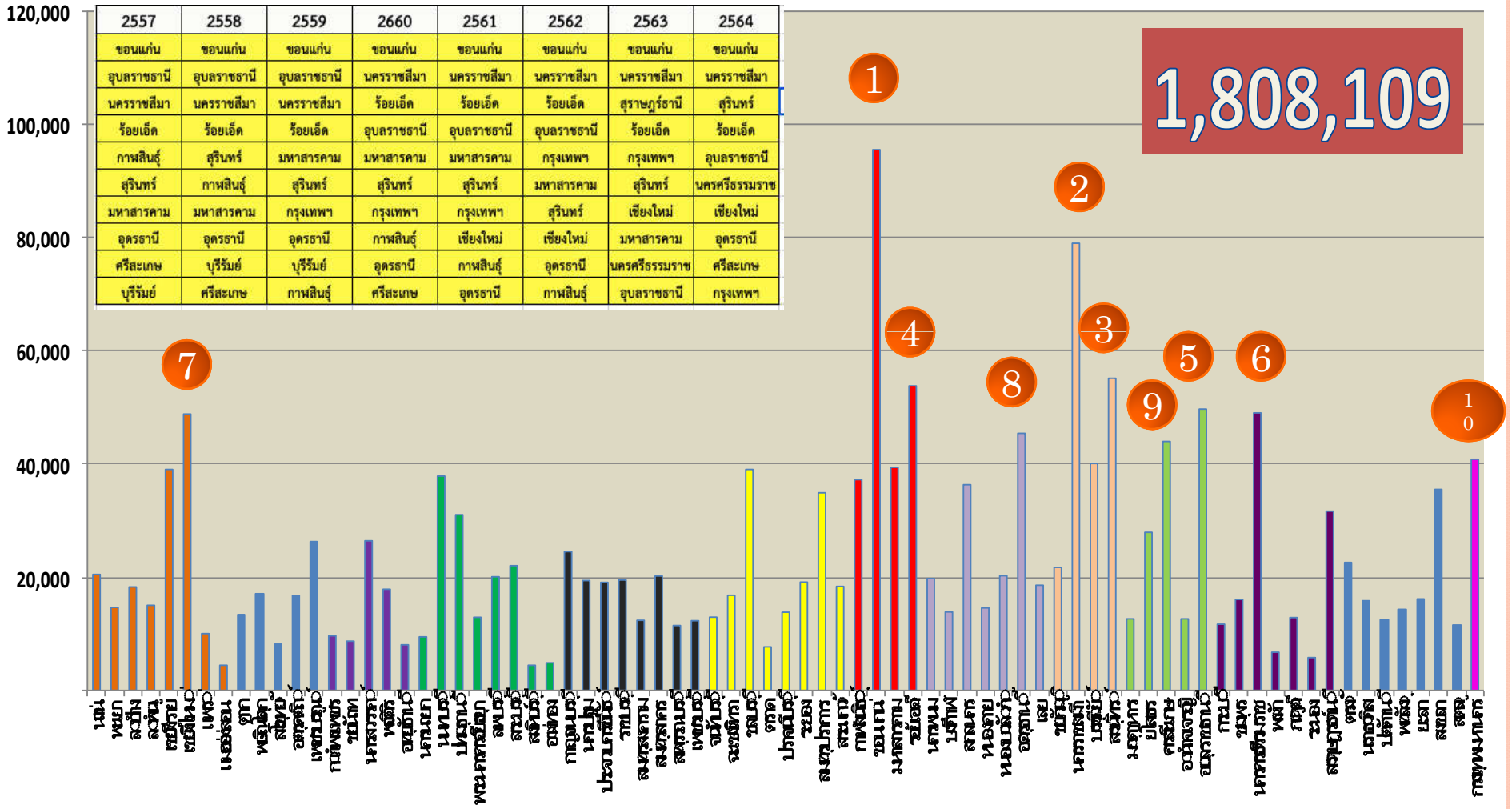
AMBULANCE MISSION AT PROVINCIAL LEVEL 2021



2557	2558	2559	2660	2561	2562	2563	2564
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อุบลราชธานี	อุบลราชธานี	อุบลราชธานี	นครราชสีมา	นครราชสีมา	นครราชสีมา	นครราชสีมา	นครราชสีมา
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ร้อยเอ็ด	ร้อยเอ็ด	ร้อยเอ็ด	อุบลราชธานี	อุบลราชธานี	อุบลราชธานี	ร้อยเอ็ด	ร้อยเอ็ด
กาฬสินธุ์	สุรินทร์	มหาสารคาม	มหาสารคาม	มหาสารคาม	กรุงเทพฯ	กรุงเทพฯ	อุบลราชธานี
สุรินทร์	กาฬสินธุ์	สุรินทร์	สุรินทร์	สุรินทร์	มหาสารคาม	สุรินทร์	นครศรีธรรมราช
มหาสารคาม	มหาสารคาม	กรุงเทพฯ	กรุงเทพฯ	กรุงเทพฯ	สุรินทร์	เชียงใหม่	เชียงใหม่
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ศรีสะเกษ	บุรีรัมย์	บุรีรัมย์	อุดรธานี	กาฬสินธุ์	อุดรธานี	นครศรีธรรมราช	ศรีสะเกษ
บุรีรัมย์	ศรีสะเกษ	กาฬสินธุ์	ศรีสะเกษ	อุดรธานี	กาฬสินธุ์	อุบลราชธานี	กรุงเทพฯ

ที่มา:ws.niems.go.th


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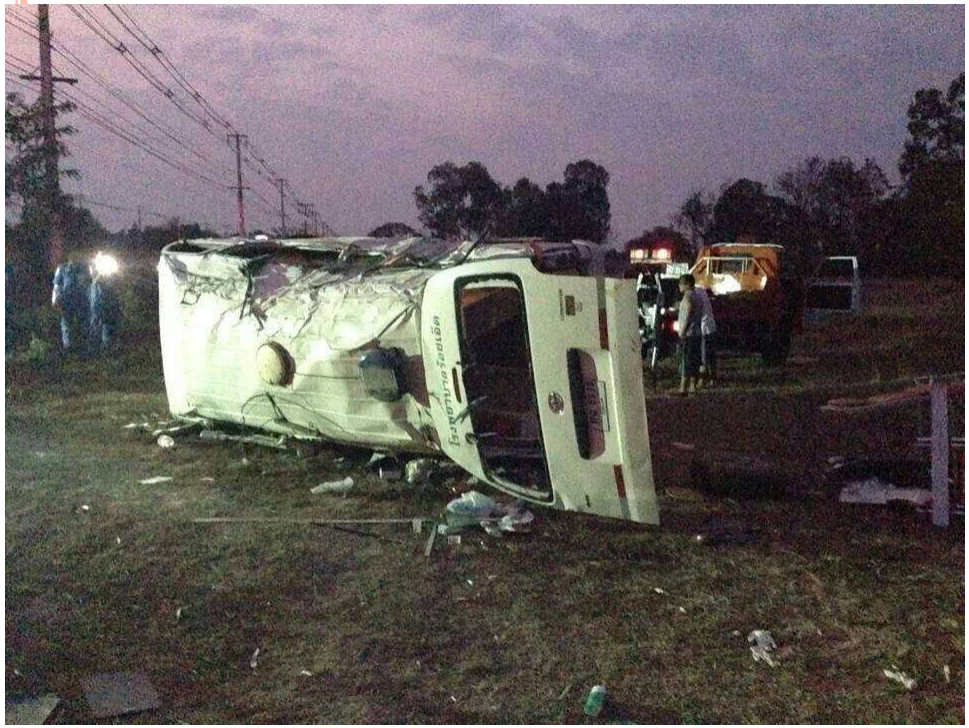
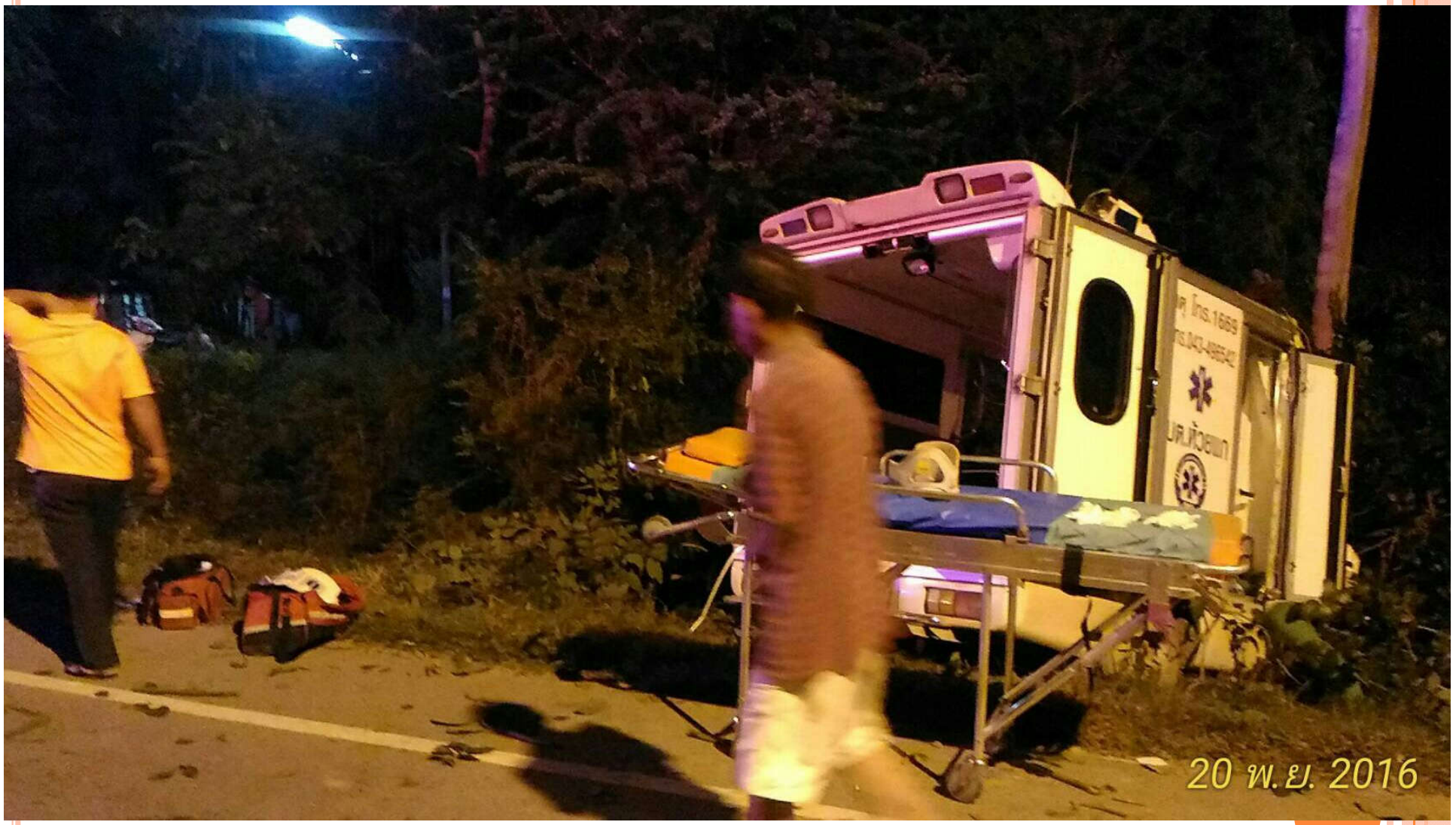


AMBULANCE


20 พ.ย. 2016

STRATEGIES FOR AMBULANCE SAFETY

- Capacity building for ambulance drivers
- Fitness to drive measures for ambulance drivers
- Creating safety national standard of ambulance
- Creating national safety operating system
- Creating national standard for monitoring system
- Setting up personnel protection system
- Setting up public awareness and participation
- Setting up protocol forambulance crash investigation

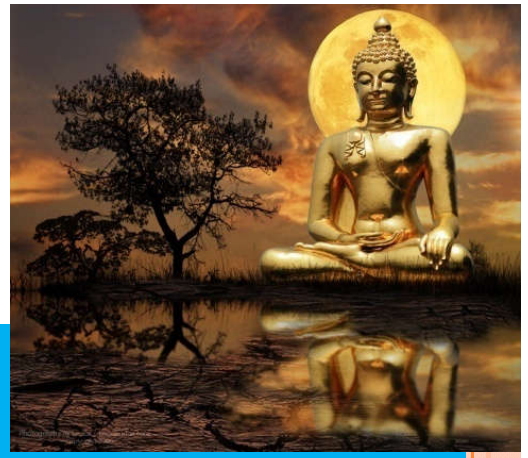
Roles of every health department in TIP

- Oneself
- Family members
- Organization enforcement
- Community surrounding the department

WHAT BEHAVIOR AND MEASURES SHOULD BE CONCERNED

1. Wearing helmets and head light on
2. Don’t drink driving
3. Driving within speed limit
4. Using seat belt
5. Stop driving when sleepy
6. Driving strictly to traffic rules
7. Not using double decker buses
8. Installing seat belt in every seats of every hospital vans
9. Installing CCTV and GPS in every hospital cars

ยุทธวิธีการขับเคลื่อนกระบวนทัพ



อปริหานิยธรรม 7
ธรรมะแห่งความเจริญ

1. สมาชิกร่วมกันประชุมเป็นนิตย์
2. สมาชิกหมั่นเริ่มประชุมและเลิกประชุมโดยพร้อมเพรียงกัน
3. สมาชิกยอมรับมติส่วนใหญ่ของที่ประชุมโดยพร้อมเพรียงกัน
4. สมาชิกให้การยอมรับและเคารพผู้อาวุโส
5. สมาชิกดูแลและสงเคราะห์ผู้ด้อยโอกาส
6. สมาชิกส่งเสริมและรักษาวัฒนธรรมและประเพณีที่ดีงาม
7. สมาชิกช่วยกันส่งเสริมและทำนุบำรุงพระศาสนา

Coverage

1 sub district

1 ambulance unit

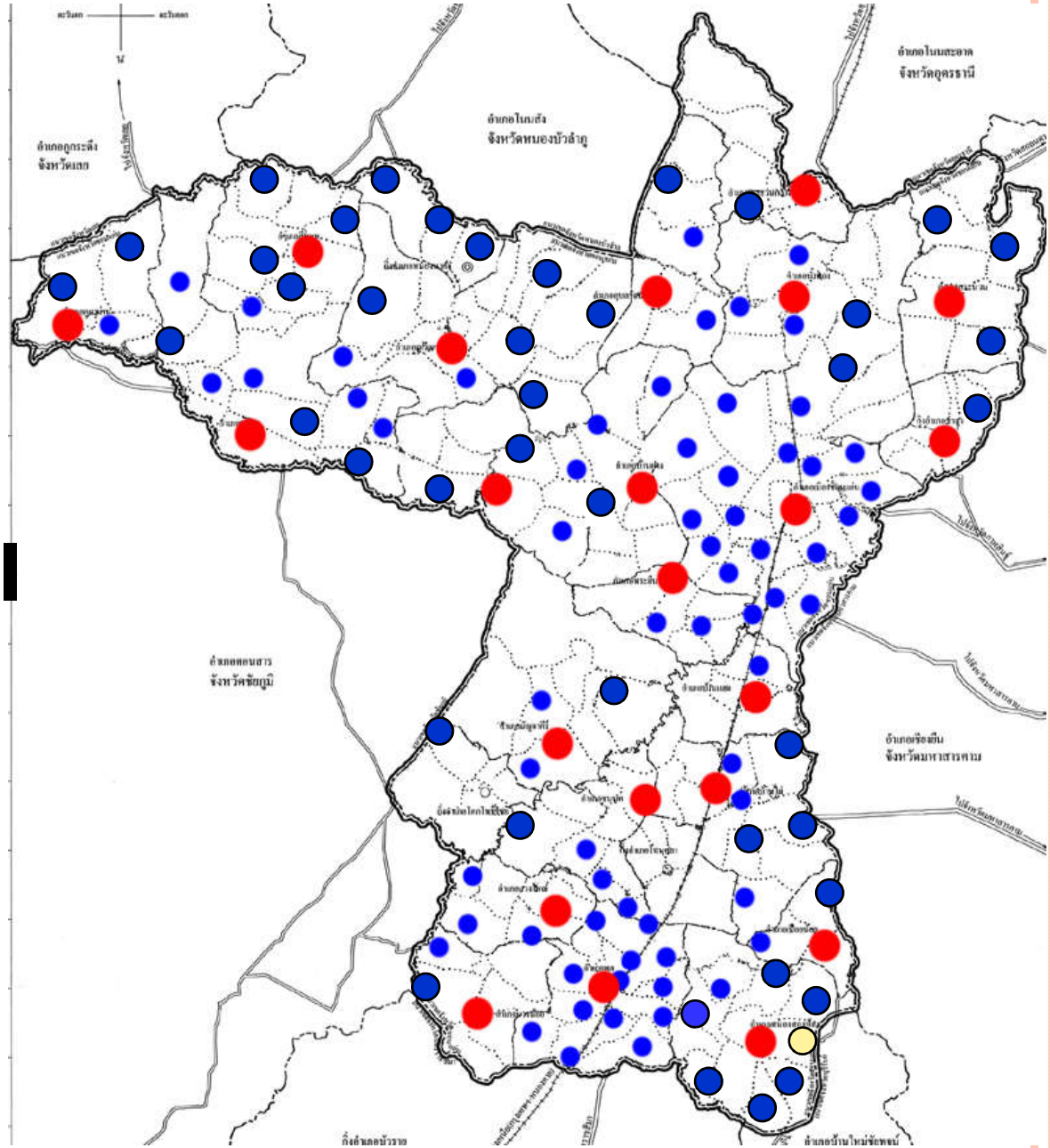
Resources

1. EMS mission team
    - Advance 1,796
    - Intermediate 80
    - Basic 1,530
    - First responder 7,770
2. Registered personnel 150,727
3. Registered car ambulance 14,189
4. Air transport ambulance 100
5. Marine ambulance 1,128
6. Provincial communication center 78

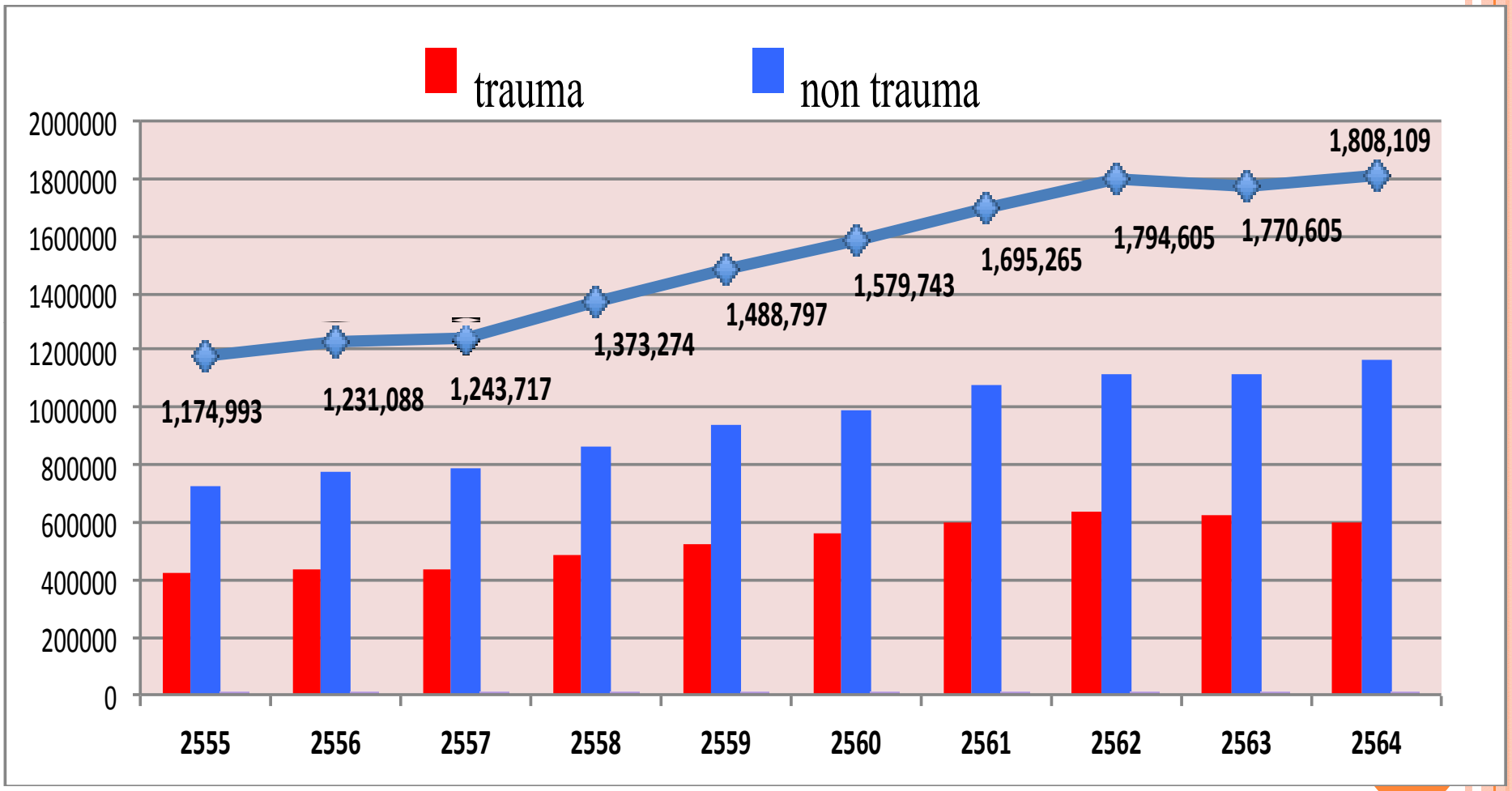
Location of ambulance Stations in Khon Kaen

Advance level (ALS)

Basic level (FR)



NUMBER OF AMBULANCE MISSION : 2012-2021



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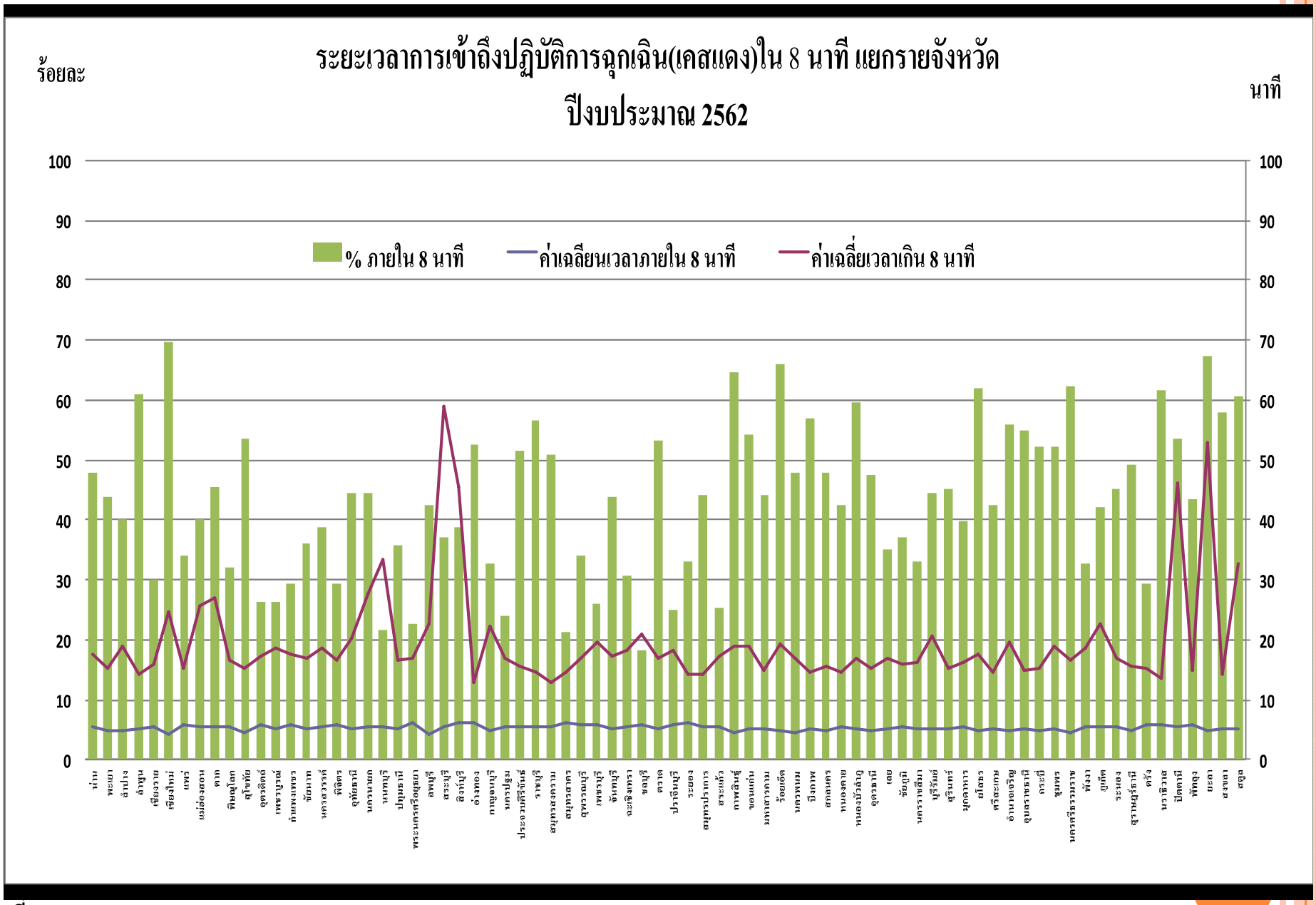
Efficiency

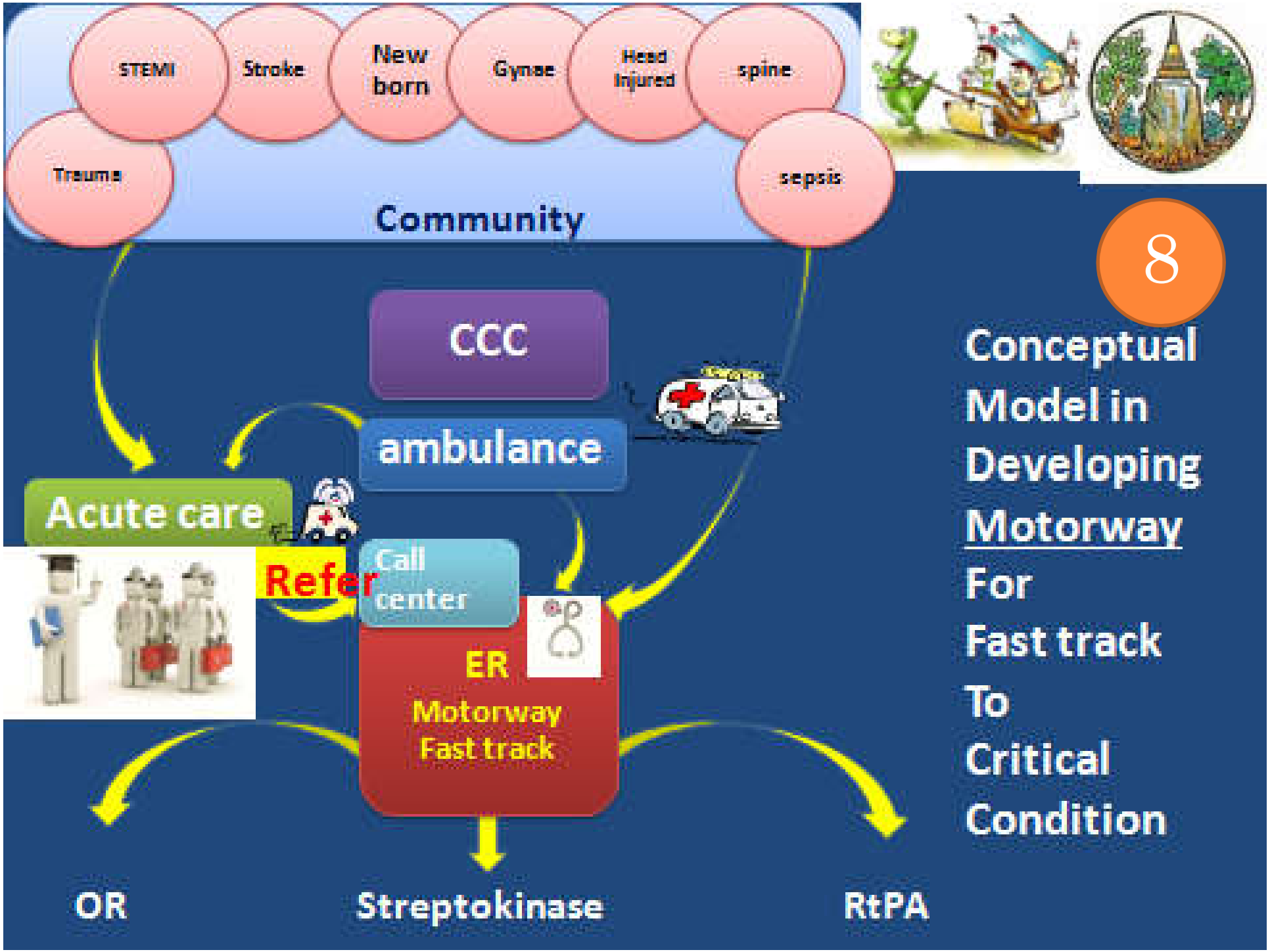
Khon Kaen Provincial Emergency Operation Center

Means of the operational response	Time Hr : min : sec
Dispatching	00:01:35
CCC to the ambulance station	00:01:59
From the ambulance station to the scene	00:08:20
At the scene	00:03:12
Receiving a call to scene	00:14:05
From the scene to the nearest hospital	00:20:15

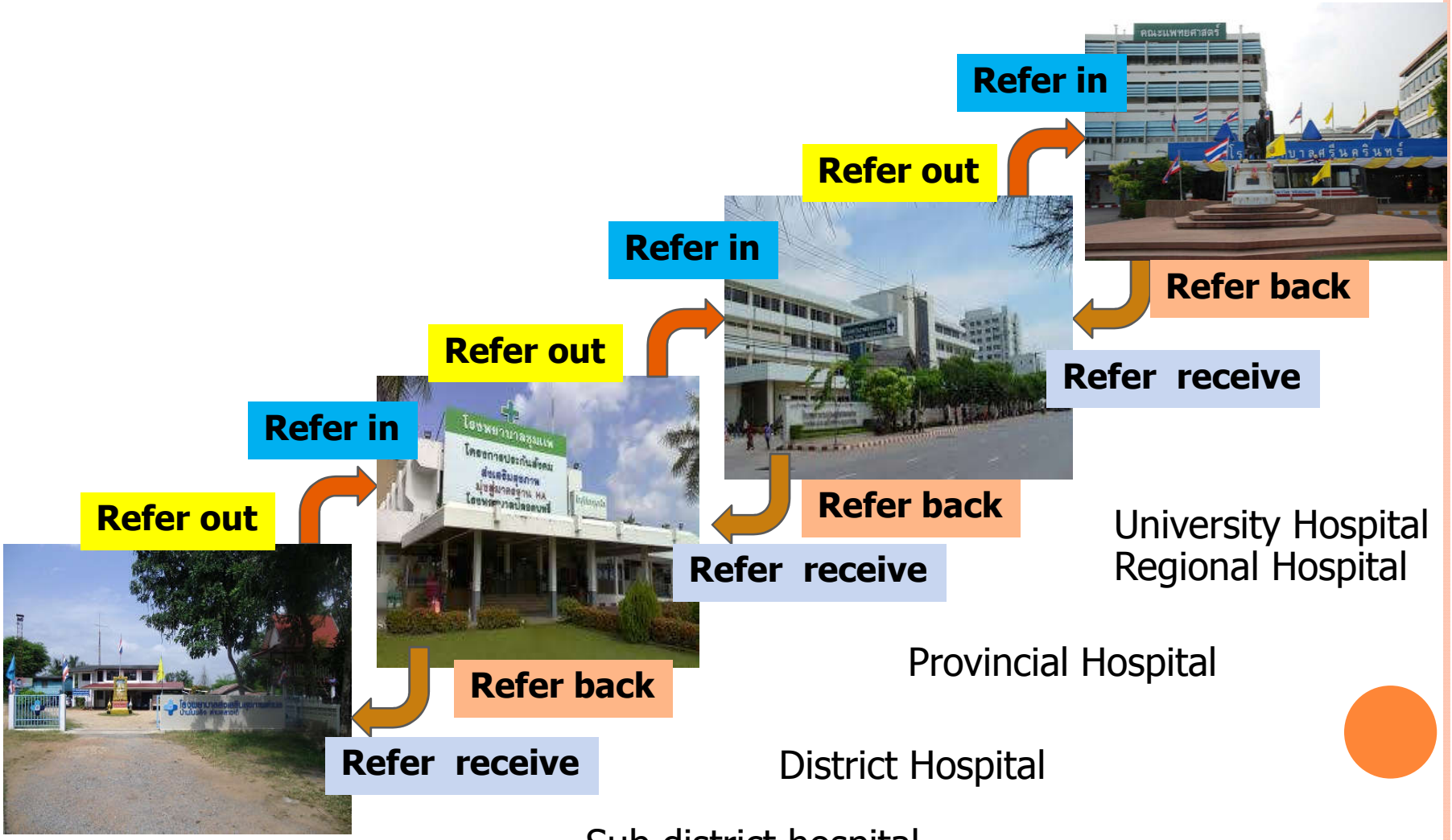
Source: *10th & 12th Health Region Database*



ที่มา WWW.niems.go.th: Data Warehouse


STEMI
Stroke
New born
Gynae
Head injured
spine
Trauma
sepsis
Community
8
CCC
ambulance
Acute care
Refer
Call center
ER
Motorway
Fast track
Conceptual
Model in
Developing
Motorway
For
Fast track
To
Critical
Condition
OR
Streptokinase
RtPA

THE REFERRAL SYSTEM TERMINOLOGY

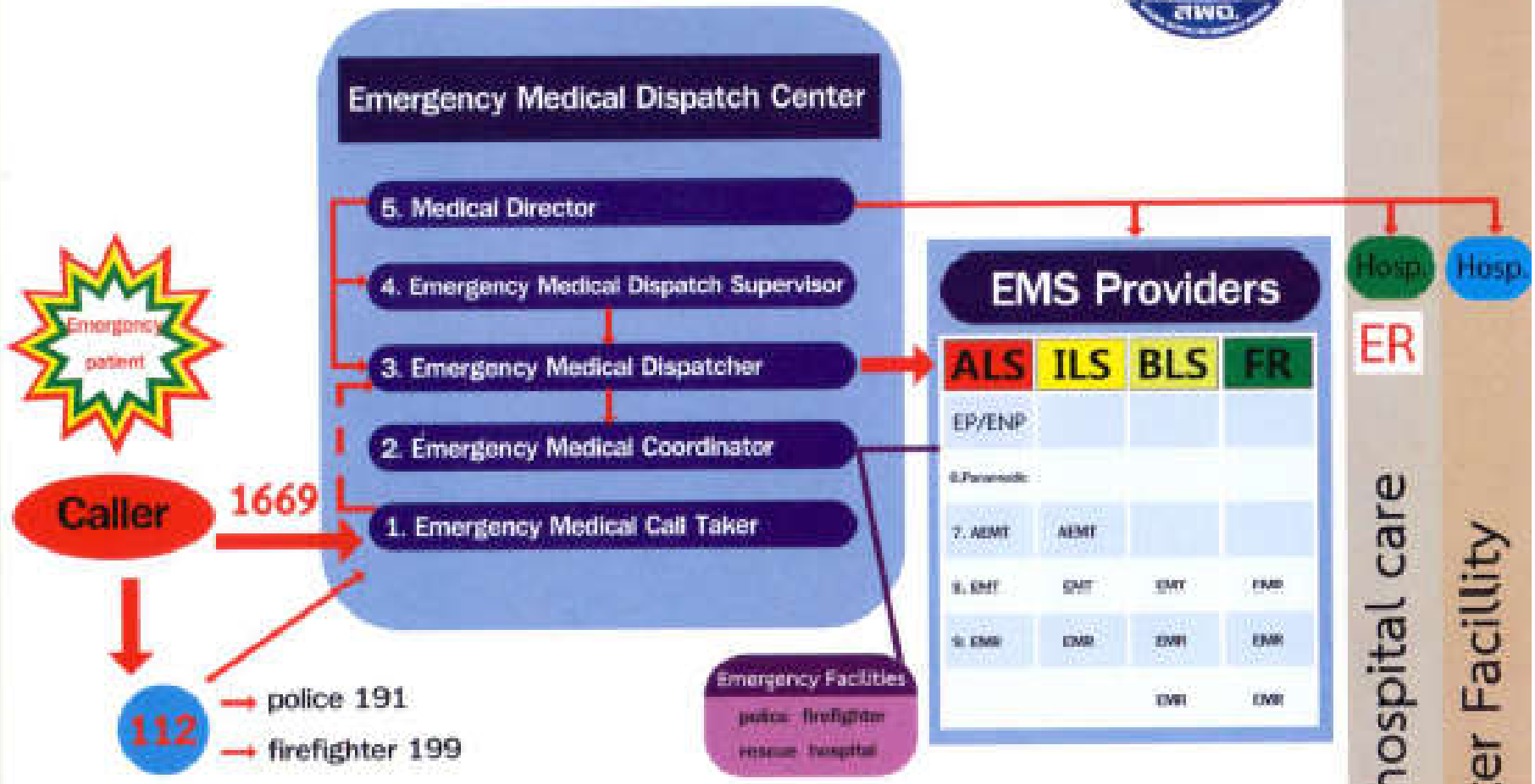


NATIONAL STRATEGIES FOR DEVELOPMENT OF REFERRAL SYSTEM

1. Set up provincial referral call center
2. Capacity building
3. Strengthen capacity of node and network
4. Develop referral software program
5. Implementing technology for raising the effectiveness of the referral system
6. Strengthen effectiveness of organisation and administrative system

Quallity

Emergency Medical Operation Flowchart



Capacity Building of personnel

Training programs

- Formal training – medical, nursing students
  resident training
- In-service (continuing training):
  - ATLS (Advanced Trauma Life Support)
  - ACLS (Advance Cardiac Life Support)
  - BLS (Basic Life Support)
  - KATEC (Advance Trauma Emergency Care)
  - FR (First Responder)
  - EMT-B (Emergency Medical Technician-Basic)
  - Pre Hospital Care Nurse
  - Care for the Referral
  - Safety for the EMS personnel
  - DMAT MERT (disaster training course)

EMERGENCY PHYSICIAN RESIDENT TRAINING

KATEC : ADVANCE TRAUMA AND EMERGENCY CARE

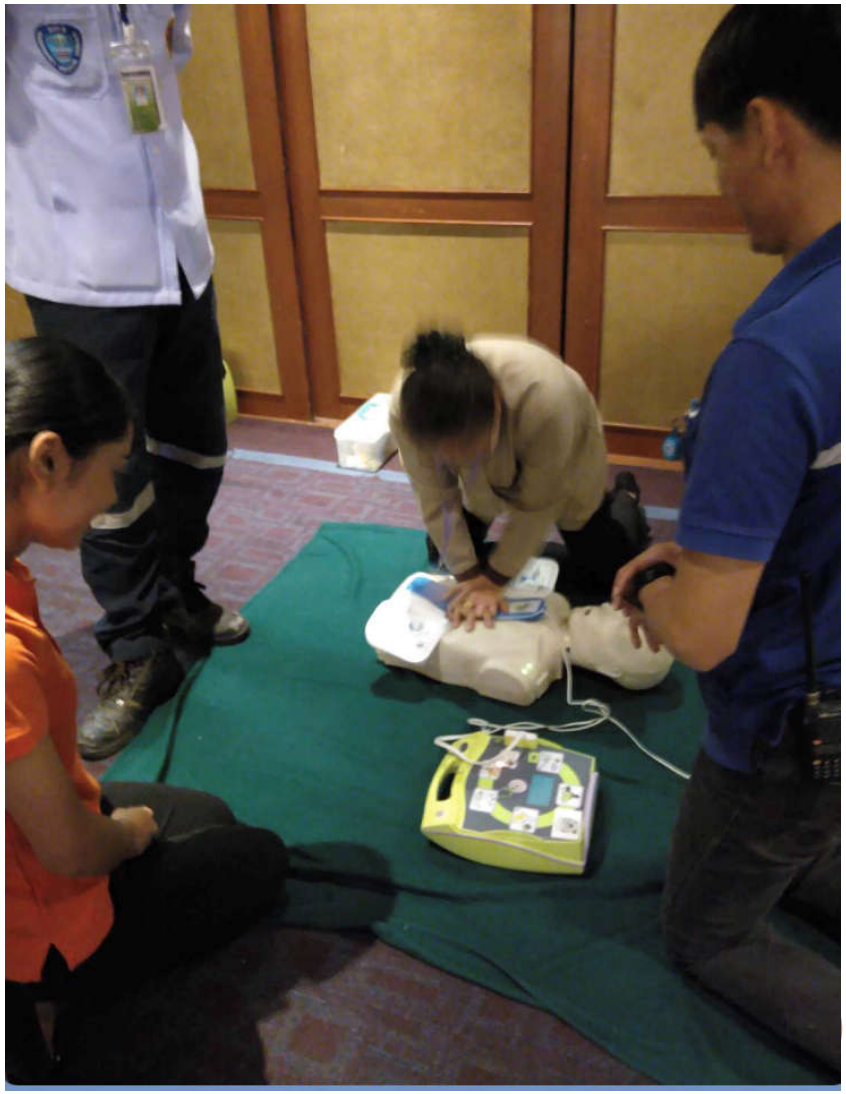
PRE HOSPITAL CARE NURSE TRAINING COURSE

Emergency Medical Technician Training

COMMUNITY EMERGENCY VOLUNTEER

- Target 1% of the population
- Village health volunteer, students, teachers, police , public bus – truck divers,
- 3 hrs. training in BLS AED, detect and report EMS
- Trained by ED of every hospitals

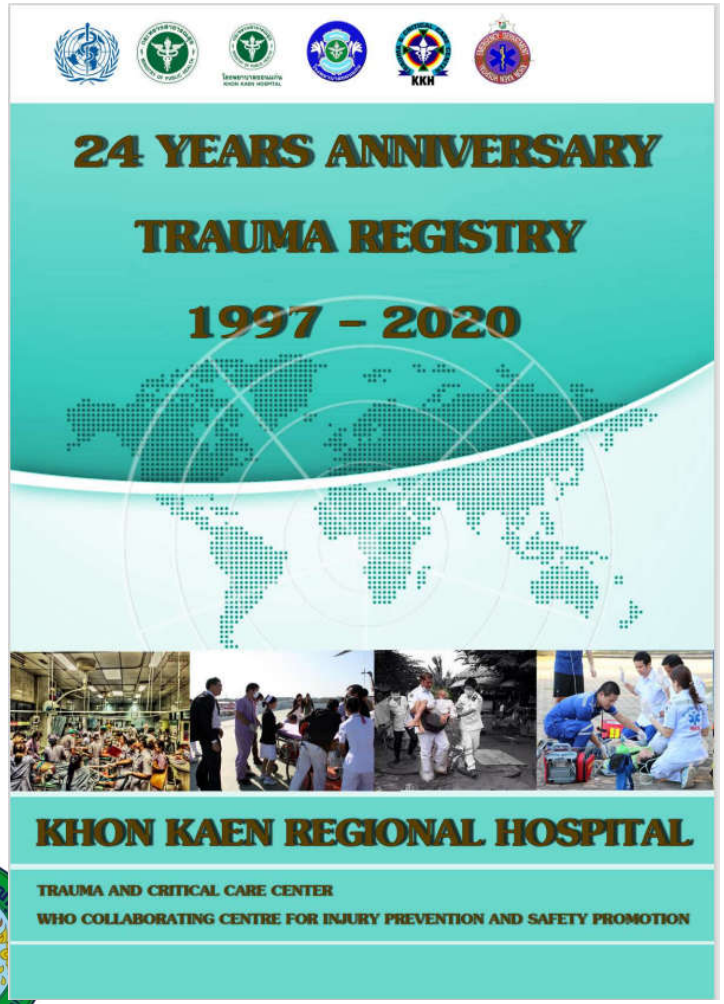

CPR Challenge



CONCEPTUAL FRAMEWORK FOR DEVELOPING TQI

Necessary component	Activities	Closing the loop
Trauma committee Policy Trauma registry Trauma algorithm Trauma KPI	Trauma audit - Peer review complication red/super red dead refer return to OR ICU Multidisciplinary quality round Risked adjust mortality monitor Environmental site visit	**Guidelines, pathways, and protocols** • implementation of pre-existing guidelines, pathways, and protocols • original development • modification **Targeted education** • rounds • conferences • journal clubs • focused reading • case presentations • newsletters • posters • videos **Peer review presentations** **Action targeted at individual providers (a small component of QI)** • counseling • further training • restriction of privileges **Enhancement of resources** • facilities • equipment • communication

Most important tool for monitor & evaluation TEC system



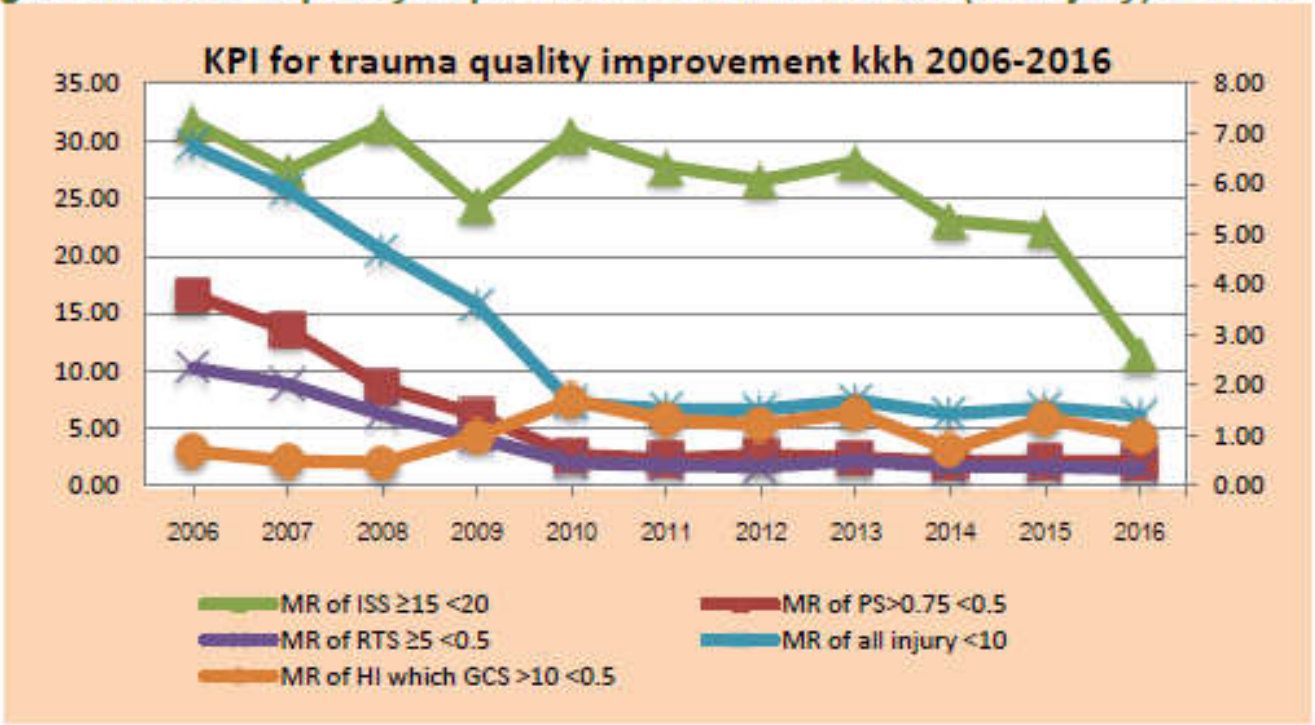
Executive Summary Table of Injury Surveillance 1997-2007											
number & percentage	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of casualthy	13071	15140	16702	17903	18773	20091	23268	22826	23500	23767	24221
male(%)	72.73	71.62	70.31	69.99	69.47	68.91	69.46	68.68	68.6	67.49	66.3
occupation(%)											
labor	36	31	29	28	31	37	44	43	46	47	43
student	23	22	29	29	29	27	28	29	29	30	31
farmer	17	14	12	13	13	10	7	6	5	4	4
housewife	5	6	5	6	6	5	5	5	6	5	5
others	5	18	15	10	9	9	9	9	7	8	10
merchant	7	4	3	4	4	3	2	2	1	1	1
police-solder	2	1	1	1	1	1	1	1	1	1	1
priest/monk	1	1	1	1	1	1	0	0	0	0	1
officer	4	4	4	8	7	7	4	5	5	4	4
age (%)											
>0-15	21	23	24	23	23	21	16	21	21	23	21
>15-30	46	43	41	42	40	44	45	41	40	39	38
>30-45	22	21	21	20	22	20	20	21	21	20	21
>45-60	8	9	9	10	10	10	13	11	12	12	13
>60	3	4	5	5	5	5	6	6	6	6	7
% of traffic injury	53.19	48.55	45.59	44.03	44.05	45.45	42.52	40.81	40.22	37.79	37.12
% of non traffic injury	46.81	51.45	54.41	55.97	55.95	54.55	57.48	59.19	59.78	62.21	62.88
number of fall	N/A	1911	2193	2253	2580	2578	2949	3288	3311	3466	3534
number of violence											
self harm	59	236	273	334	262	298	374	390	363	325	366
assault	856	1143	1369	1534	1609	1774	2769	2467	2433	2531	2493
Hospital information											
% admission TI	31.13	48.07	45.76	44.78	46.52	45.13	44.38	43.88	43.93	44.73	43.08
%admission non TI	19.86	30.16	29.67	26.66	25.52	25.02	23.78	24.61	25.19	24.71	24.62
MR of TI	4.33	4.79	3.56	4.15	4	4.51	4.13	4.66	3.87	4.27	3.64
MR of non TI	0.74	2.43	1.53	1.07	1.04	1.15	1.01	1.12	1.00	0.91	0.82
number of referral	2300	3616	4462	4528	4700	5497	6106	5947	6323	6281	6665
referral rate	17.60	23.88	26.72	25.30	25.04	27.36	26.24	25.62	26.91	26.43	27.52
admission of referral	2116	3338	3960	3987	4154	4507	4927	4778	5033	4972	5032
referral admission rate	49.15	56.85	64.07	64.30	63.60	65.70	65.07	64.44	65.44	64.82	66.01
MR of non refer	5.89	4.18	4.68	4.20	3.66	4.25	3.71	3.79	3.61	3.11	2.96
MR of referral in KK province	8.62	8.60	5.92	7.16	6.15	7.02	5.48	7.12	5.89	6.17	4.64
MR of referral by other KK	14.95	13.97	12.83	12.65	14.44	16.15	17.56	17.60	14.51	16.26	15.54
road users											
% motorcycle	80.01	76.00	76.98	75.87	76.85	78.69	81.01	79.59	79.88	76.69	79.08
% pedestrian	5.29	6.05	6.63	5.95	5.86	5.11	4.41	4.67	4.41	4.61	5.13
% car	0.82	1.56	1.17	1.39	1.15	1.17	1.12	1.42	0.98	1.27	1.18
% bicycle	2.19	3.43	3.95	4.38	4.12	3.75	3.77	4.4	4.46	4.4	4.39
% pick up	6.95	7.63	6.23	6.42	6.42	6.36	5.01	6.11	6.27	5.38	6.1
Head injury											
MR of BR1injury; Max AIS1-3	N/A	4.19	1.34	0.59	2.06	1.85	0.40	1.95	3.08	2.18	2.00
MR of BR1injury; Max AIS4-6	N/A	42.71	34.19	36.36	32.64	33.96	31.23	37.59	29.87	33.79	30.82
MR of drunk driver	5.09	4.52	4.47	4.43	2.81	3.54	3.82	3.59	3.02	3.25	2.73
MR of non drunk driver	2.67	2.96	1.89	2.13	2.20	2.28	2.53	2.64	1.41	1.98	1.56
MR of drunk passenger	4.96	3.66	3.66	3.6	3.38	4.36	2.56	3.64	2.53	2.55	2.37
MR of non drunk passenger	2.95	3.85	2.45	2.93	2.54	3.21	2.28	3.49	2.4	2.92	2.61
MR of drunk pedestrian	3.85	8.77	6.82	5.45	10.42	9.43	5.45	13.85	0	0	0
MR of non drunk pedestrian	5.48	6.04	2.22	2.22	3.09	3.31	3.8	5.95	3.18	3.12	5.56
% helmet used driver injury	N/A	19.64	22.02	19.19	13.57	13.67	16.74	19.26	27.59	25.87	26.59
% helmet used passenger injury	N/A	13.24	11.76	10.04	7.33	6.49	8.16	10.74	17.13	15.44	16.35
% seatbelt used driver injury	N/A	17.71	34.04	46.24	23.02	27.16	19.87	22.94	25.98	24.82	22.63
undo EMS (%)											
airway care	82.94	88.60	82.27	59.76	57.14	14.55	30.14	23.53	26.75	19.69	20.83
stop bleed	73.79	78.24	73.66	70.30	68.22	52.74	51.68	45.07	51.47	34.00	31.55
splint	77.97	82.28	76.83	60.81	56.53	31.15	24.54	20.79	21.04	10.26	6.52
IV fluid	72.11	83.87	82.66	81.97	77.36	37.55	37.56	25.83	19.76	21.36	18.58
undo referral (%)											
airway care	32.45	25.88	25.46	14.48	15.86	12.09	5.18	5.10	4.05	2.41	2.45
stop bleed	15.82	8.70	5.97	5.09	6.67	4.16	3.95	4.39	1.66	0.43	0.82
splint	27.74	19.20	20.95	23.51	19.39	16.36	10.72	10.22	6.10	5.12	2.14
IV fluid	10.46	8.54	4.78	5.29	6.51	3.68	1.76	1.27	0.43	0.42	0.47
MR of TRISS;	N/A	218	153	200	230	242	234	247	221	272	213
0-0.25	N/A	80.28	72.73	72.97	70.13	74.11	79.51	88.03	66.06	71.70	75.96
>0.25-0.50	N/A	71.74	61.06	65.83	61.67	59.87	65.71	75.68	55.21	61.27	66.12
>0.50-0.75	N/A	49.09	41.54	49.19	45.76	36.73	37.16	49.08	41.58	41.33	40.00
>0.75-1.00	N/A	3.11	1.85	2.62	2.64	2.76	2.38	2.22	2.15	2.71	2.17

Trauma project monitor for quality improvement in Trauma care

Table 57 KPI for quality improvement in trauma care (All injury) 2006-2016

Key performance indicator	Mean	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
MR of PS>0.75	<0.5	3.80	3.11	1.97	1.41	0.61	0.54	0.61	0.56	0.48	0.49	0.48
MR of ISS ≥15	<20	31.63	27.44	31.37	24.49	30.56	27.80	26.61	28.21	23.1	22.36	11.47
MR of RTS ≥5	<0.5	2.35	2.02	1.42	0.95	0.46	0.41	0.38	0.49	0.38	0.38	0.34
MR of all injury	<10	6.77	5.90	4.68	3.61	1.65	1.52	1.51	1.70	1.43	1.56	1.4
MR of HI which GCS >10	<0.5	0.69	0.49	0.46	0.98	1.71	1.31	1.22	1.46	0.72	1.34	0.99

Figure 79 KPI for quality improvement in trauma care (All injury) 2006-2016



Accessibility

Provincial wide PR


EMS ALARM CENTER


24/05/2006

SHIFTING OF PARADIGM

บริการดุจญาติ ด้วยจิตเมตตา จริงใจ

Old paradigm

- Stand alone
- Fragment
- Basic
- Adequate

- Clinical role
- Individual
- Silence
- Listen
- Too difficult

Shift to new paradigm

- Network
- Oneness
- Excellent
- Continuous learning, quality improvement
- Facilitator role
- Team working
- Communicate
- Record
- Yes I can

TAKE HOME MESSAGE & SUMMARY

Management

- Setting up trauma committee
- Organising monthly committee meeting
- SWOT analysis
- Establishing 2022-2023 plan and implementing plan
- Self assessment
- Connect and communicate
- Learning and sharing among network…WHO assist

TAKE HOME MESSAGE & SUMMARY

Activities

- Implement trauma registry
- Quality improvement program
- Monitor KPI
- Organization enforcement for RTI program
- Ambulance safety program
- Plan for personnel capacity building
- Researches
- Annual report

- **Never doubt that a small group of thoughtful, committed people can change the world.**
  Indeed, it is the only thing that ever has.

"Margaret Mead"

Committed TMD and TNC can certainly make different

Life is good when you are happy,
Life is better when other people
are happy because of you