

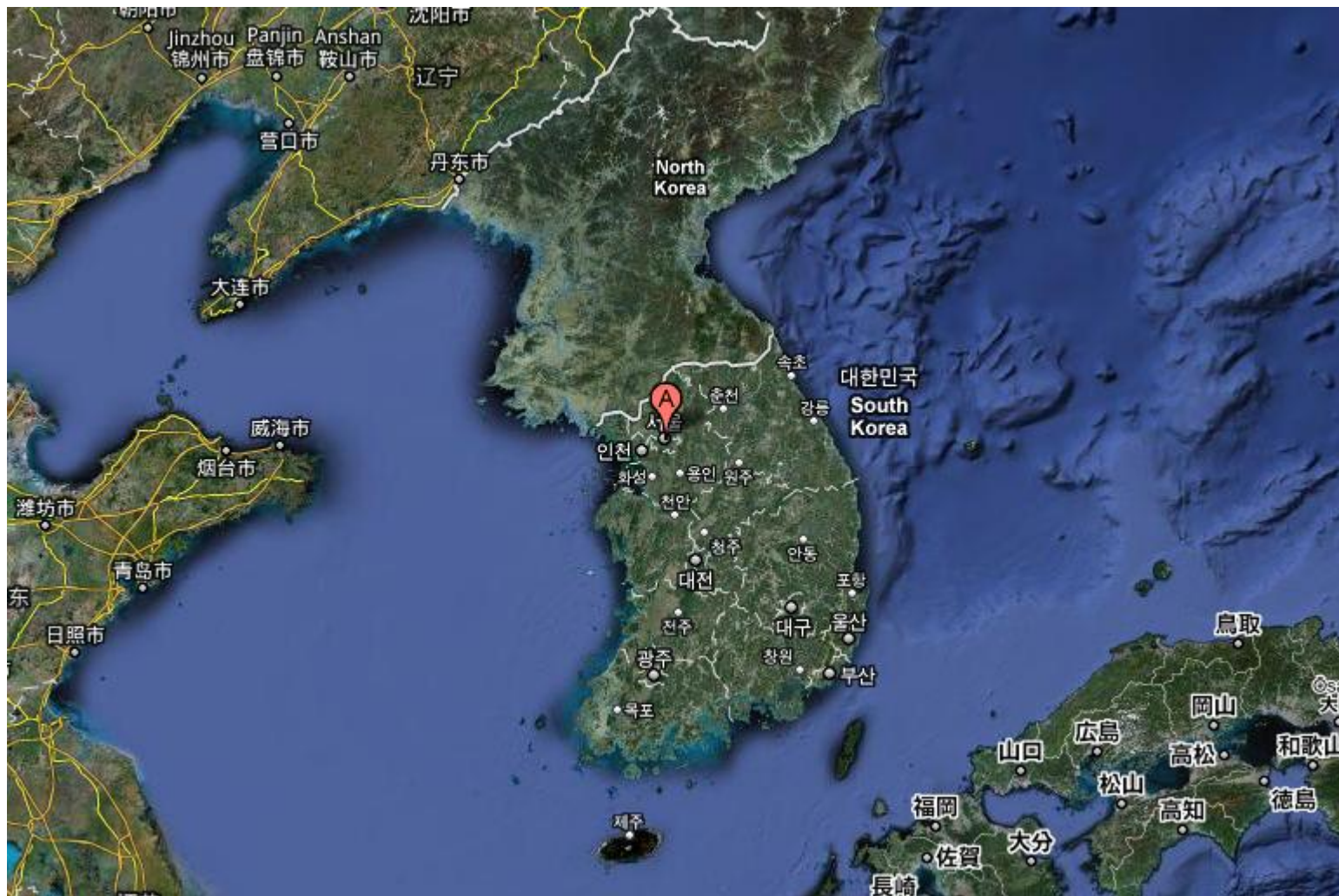
EMS in Seoul

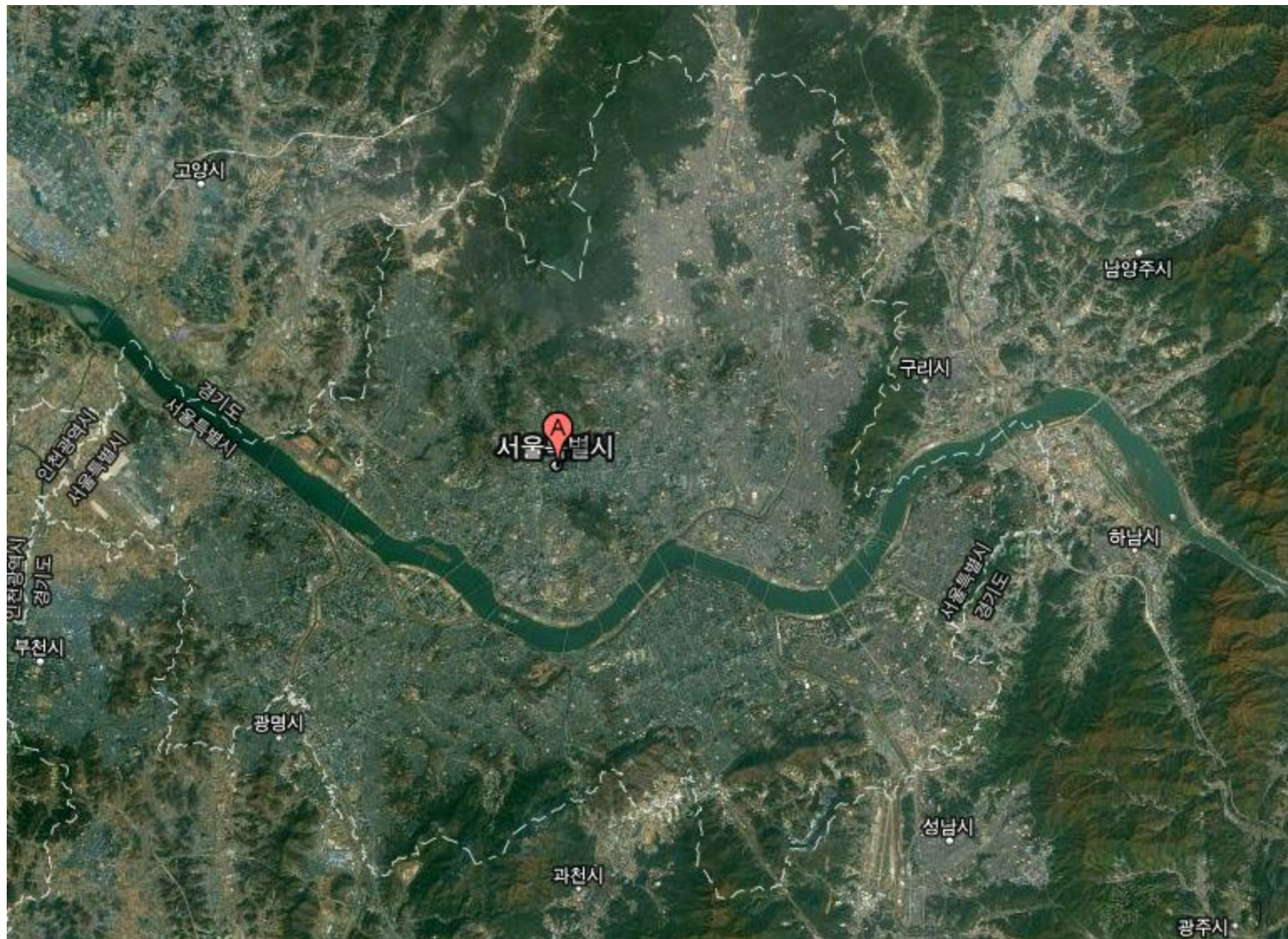
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SMG-SNU
SEOUL METROPOLITAN GOVERNMENT SEOUL NATIONAL UNIVERSITY
BORAMAE MEDICAL CENTER





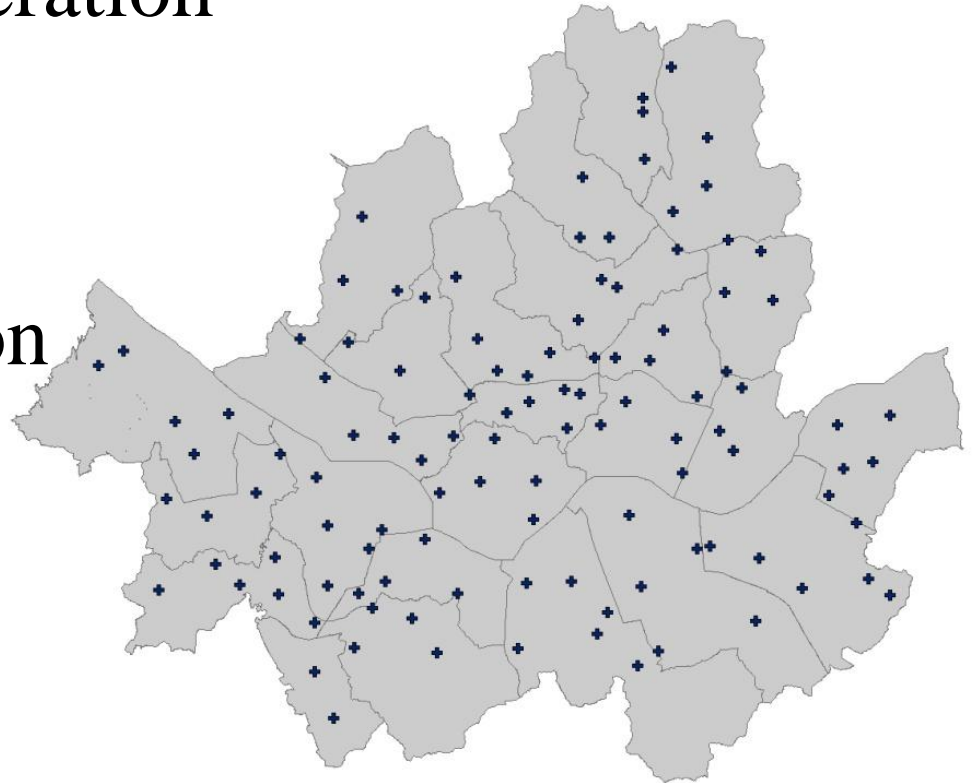


General information

- Population : 10,456,034 (2008)
- Area : 605.27km² (2008)
- Urban
- Pop. density : 17,283 person/km²
- Only one EMS agency(Fire department)

General information

- Free and tax-based
- Fixed ambulance operation
- BLS single-tiered
- 114 ambulance station



General information

- One dispatch center for Seoul
 - operated by fire department
 - not certified dispatcher



Structure

- 117 BLS ambulances
- ALS ambulance : in process
- 3 helicopters : not dedicated to EMS
 - mainly used in fire/rescue
- No paramedic
 - 382(EMT-B), 347(EMT-I), 19(nurse)

Process

- EMS interval time at Seoul(2008, min)

	Mean	SD	median	25 percentile	75 percentile
Call to departure	1.7	5.5	1	1	2
Departure to scene	5.3	5.7	5	4	6
Scene to departure	7.5	6.4	6	4	10
Departure to hospital	10.8	10.1	8	5	13

Outcome

- Total transport (2008) : 250,596
- Injury / non-injury : 149,970 / 100,626

Age group	sex		총합(%)
	F	M	
0<=age<15	8,572	4,930	13,502 (5.4)
15<=age<65	98,972	66,596	165,568(66.1)
65<=age	33,606	37,920	71,526 (28.5)
Total	141,150	109,446	250,596 (100.0)

Outcome

- Sudden cardiac arrest registration project
 - By Korean center for disease control and prevention
 - Cardiac/respiratory arrest from 119 runsheet
 - From 1st January, 2006 – 31th December, 2007 in 16 provinces → build SCA database
 - Retrospective chart review (by medical transcriptionist/with Utstein style)

Outcome

- Total EMS assessed OHCA
 - 3,628(2006) / 3,224(2007)
- CPR / AED apply

year	Total (N)	EMS CPR (N(%))	EMS AED (N(%))
2006	3,628	1,867(51.5)	251(6.9)
2007	3,224	2,108(65.4)	391(12.1)

Outcome

- ROSC from CPR applied patients

Year	Total	CPR applied		ROSC			
				+		-	
	N	N	%	N	%	N	%
Total	5,337	3,865	72.4	1,191	30.8	2,674	69.2
2006	2,531	1,648	65.1	461	28.0	1,187	72.0
2007	2,806	2,217	79.0	730	32.9	1,487	67.1

Outcome

- Witnessed arrest?

Year	Total	Non-witnessed		Witnessed		Unknown	
	N	N	%	N	%	N	%
Total	5,337	2,318	43.4	2,559	48.0	460	8.6
2006	2,531	1,077	42.6	1,248	49.3	206	8.1
2007	2,806	1,241	44.2	1,311	46.7	254	9.1

Outcome

- Initial rhythm of SCA

Year	Total	VF		Pulseless VT		Shockable rhythm		PEA		Asystole	
		N	%	N	%	N	%	N	%	N	%
Total	5,337	248	4.6	79	1.5	327	6.1	257	4.8	3,952	74.0
2006	2,531	109	4.3	35	1.4	144	5.7	106	4.2	1,911	75.5
2007	2,806	139	5.0	44	1.6	183	6.5	151	5.4	2,041	72.7

Outcome

- Bystander CPR

Year	Total	Done		Not done		unknown	
	N	N	%	N	%	N	%
2007	1,421	53	3.7	382	26.9	986	69.4

* During 2007. 7 – 2007. 12

Outcome

- ED result

	ED	Total		Pediatric		Adult		Geriatric	
		N	%	N	%	N	%	N	%
2006 & 2007	Total	5,337	100.0	114	100.0	2,466	100.0	2,757	100.0
	Transfer	159	3.0	3	2.6	95	3.9	61	2.2
	Admission	844	15.8	20	17.5	461	18.7	363	13.2
	Death	4,307	80.7	90	79.0	1,892	76.7	2,325	84.3
	unknown	27	0.5	1	0.9	18	0.7	8	0.3

Outcome

- Final outcomes

Results	Total		2006		2007		
	N	%	N	%	N	%	
Total	5,337	100.0	2,531	100.0	2,806	100.0	
Death	4,902	91.8	2,337	92.3	2,565	91.4	
Survival to hospital admission	1,003	18.8	436	17.2	567	20.2	
Survival to hospital discharge	244	4.6	100	4.0	144	5.1	
Good neurologic outcome	CPC1	44	0.8	12	0.5	32	1.1
	CPC2	22	0.4	9	0.4	13	0.5
Poor neurologic outcome	CPC3	35	0.7	12	0.5	23	0.8
	CPC4	82	1.5	36	1.4	46	1.6
	CPC5	15	0.3	2	0.1	13	0.5
Unknown	46	0.9	29	1.1	17	0.6	

Medical direction

- Medical director
 - 3 physicians in dispatch center
 - Full-time employment
 - Mainly online direction
- No committee for medical oversight

Medical direction

- Procedures, permitted
 - Airway, intubation, LMA for CPR
 - BLS
 - IV access
 - BVM apply
 - Dextrose for hypoglycemia, NG, saline, bronchodilator for asthma attack
 - Foreign body removal from oral cavity
 - O2 supply
 - Splint / dressing
 - Vital sign measurement
 - MAST
 - AED apply

Medical direction

- Protocol
 - Exist, but not practical

차 례

개 요

개요-1. 지침의 의의	6
개요-2. 지침 사용자의 주의 사항	7
개요-3. 구호행위의 동의 및 거부	8
개요-4. 구호행위의 미실시 및 중단	10
개요-5. 구호행위의 허용 및 제한	12
개요-6. 응급구조사와 지도의사의 상호관계	15

일반조치절차

일반-1. 일반조치절차의 대상 및 방법	18
일반-2. 현장 조사·조치	20
일반-3. 환자의 이차 평가·처치	21
일반-4. 외상 환자의 이차 평가·처치	28
일반-5. 비외상 환자의 이차 평가·처치	32
일반-6. 이송 중의 감시·처치	34
일반-7. 유·무선 통신을 통한 의학적 교신	36
일반-8. 이송대상기관의 선정 및 결정	38
일반-9. 구호행위의 기록	40

증상 및 질환

증상-1. 성인과 청소년의 심정지	44
증상-2. 소아 및 영아의 심정지	47
증상-3. 흉통	51
증상-4. 호흡곤란	54
증상-5. 의식저하 및 혼수	57
증상-6. 복통	61
증상-7. 상부 위장관 출혈(토혈 및 흑혈변)	64
증상-8. 행동 이상	66
증상-9. 기도 이물	68
증상-10. 급성 저혈당증 의심 환자	72
증상-11. 소아발열	75
증상-12. 경련	76

Thank you !!!

