

Travmada d nyada ve T rkiye de istatistikler ve sistemler

Do. Dr. Atıf BAYRAMOĐLU

ATAT RK  NİVERSİTESİ TIP Fak ltesi Acil Tıp AD

Travmada dünyada ve Türkiye de istatistikler ve sistemler

- Sunum Planı

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5. Ne zaman ölüyor travma hastası?
6. Neden öldürüyor, sakat bırakıyor?
7. Travma sistemleri, Dünyada, Türkiye’de
8. Sonuç

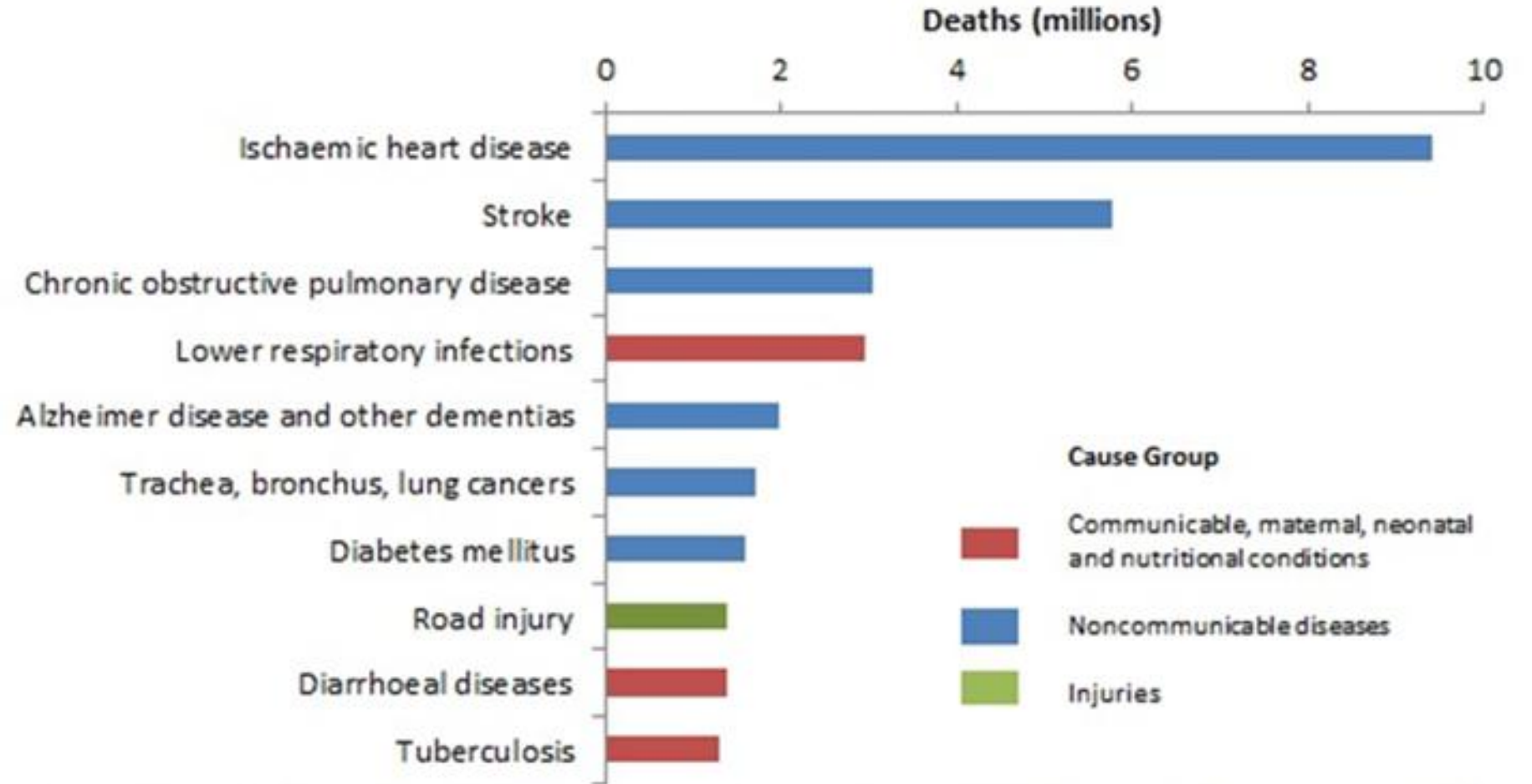
Travma

- Travma, trafik kazaları, boğulma, zehirlenme, düşme, yanma, şiddet kaynaklı yaralanma, saldırı, kendine zarar veren şiddet ve savaş eylemlerini de kapsayan geniş anlamalı bir terim.



Dünya

Top 10 global causes of deaths, 2016



Source: Global Health Estimates 2016: Deaths by Cause, Age, Sex, by Country and by Region, 2000-2016. Geneva, World Health Organization; 2018.

Dünya

- Travma bütün ölümlerin kadınlarda ve erkeklerde yaklaşık %9-10'unun sebebidir.

World Health Organization. Global burden of disease. www.who.int/healthinfo/global_burden_disease/en/ (Accessed on May 01, 2010).

- Her yıl 45 milyondan fazla insan travmaya bağlı orta ya da şiddetli sakatlıkla yaşamını sürdürüyor.

(World Health Organization. Global burden of disease. www.who.int/healthinfo/global_burden_disease/en/ (Accessed on May 01, 2010).)



Dünya

- Travma yoğun bakım ünitesine kabul edilen hastaların yaklaşık %30'unu oluşturmaktadır.

(A national evaluation of the effect of trauma-center care on mortality. MacKenzie EJ, Rivara FP, Jurkovich GJ, Nathens AB, Frey KP, Egleston BL, Salkever DS, Scharfstein DO N Engl J Med. 2006;354(4):366.)

Dünyada genelinde trafik kazalarında her gün 3700'den fazla kişi ölmektedir.

https://www.who.int/violence_injury_prevention/road_traffic/en/ (Accessed on March 06, 2019)



Dünya

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https://www.who.int/violence_injury_prevention/road_traffic/en/ (Accessed on March 06, 2019)



Dünya

- WHO 'ya göre, karayolu trafik kazaları 2014 yılında 1.25 milyon ölüme neden oldu.
- Travmanın 2030 yılına kadar dünya genelinde üçüncü büyük engelli sebebi olması bekleniyor.

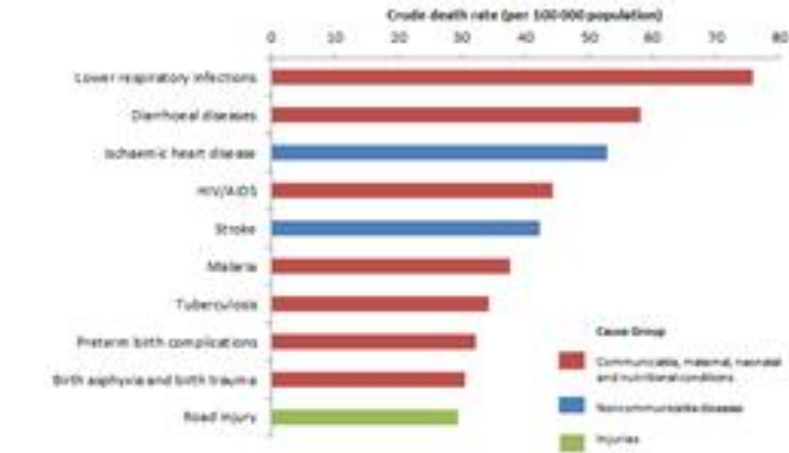
Travma

- Travma dünyanın her ülkesinde sağlığı tehdit ediyor.
- Yalnızca Amerika Birleşik Devletleri'nde, 50 milyondan fazla hasta her yıl bir tür travmaya bağlı tıbbi bakım almaktadır.

CDC. National estimates of the ten leading causes of nonfatal injuries, Centers for Disease Control and Prevention 2004.
www.cdc.gov/injury/wisqars.html (Accessed on May 24, 2010)

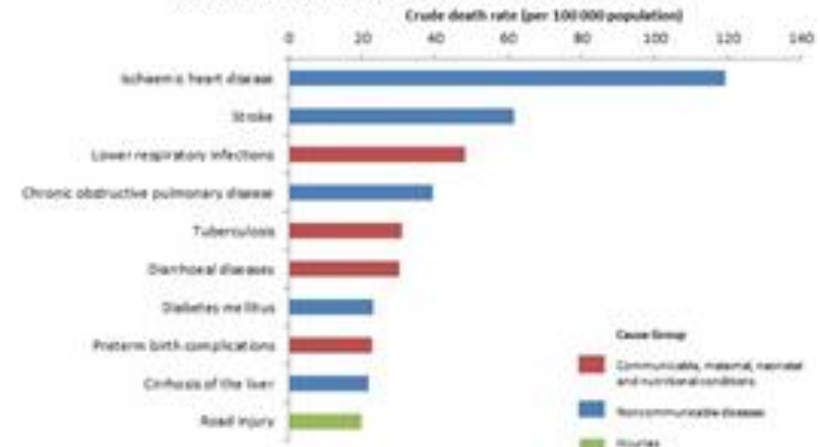
Dünya

**Top 10 causes of deaths
in low-income countries in 2016**



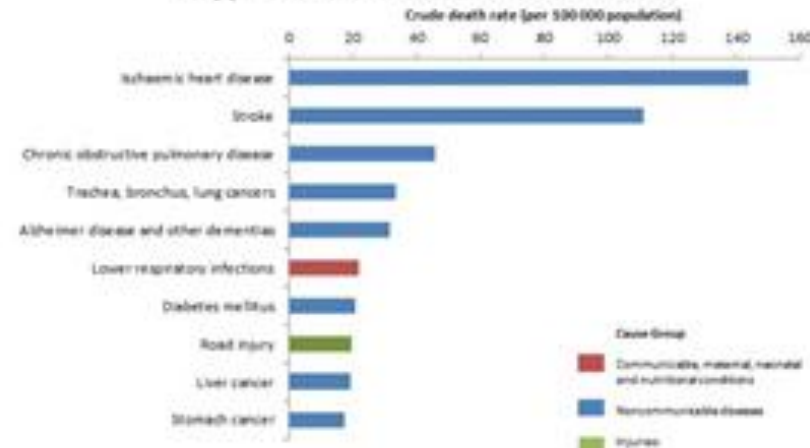
Source: Global Health Estimates (GHE) team, led by Country and Region, Global Health Estimates, World Health Organization (WHO), Geneva, Switzerland, June 2017, Interim Report. The crude death rate (CDR) is the number of deaths per 100,000 population per year.

**Top 10 causes of deaths
in lower-middle-income countries in 2016**



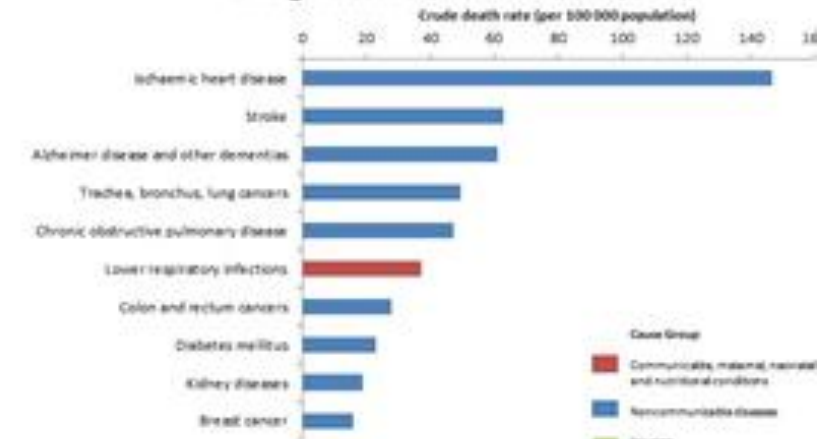
Source: Global Health Estimates (GHE) team, led by Country and Region, Global Health Estimates, World Health Organization (WHO), Geneva, Switzerland, June 2017, Interim Report. The crude death rate (CDR) is the number of deaths per 100,000 population per year.

**Top 10 causes of deaths
in upper-middle-income countries in 2016**



Source: Global Health Estimates (GHE) team, led by Country and Region, Global Health Estimates, World Health Organization (WHO), Geneva, Switzerland, June 2017, Interim Report. The crude death rate (CDR) is the number of deaths per 100,000 population per year.

**Top 10 causes of deaths
in high-income countries in 2016**



Source: Global Health Estimates (GHE) team, led by Country and Region, Global Health Estimates, World Health Organization (WHO), Geneva, Switzerland, June 2017, Interim Report. The crude death rate (CDR) is the number of deaths per 100,000 population per year.

Türkiye

- Türkiyede'de travma önemli bir mortalite ve morbidite sebebi.
- TÜİK verilerine göre 2017 yılında dışsal yaralanmalar ve zehirlenmeler sebebi ile hayatını kaybeden hasta sayısı 18901 hasta.
- Bunların 13843'ü erkek, 5055'i kadın.
- Bu 18901 hastanın (%63,6'sı) 12013 'ü 15-64 yaş grubunda, ekonomik yönden aktif çağında olan insanlar.

Türkiye

TRAFİK KAZALARI	2018 YILI		
	YERLEŞİM YERİ	YERLEŞİM YERİ DIŞI	TOPLAM
TOPLAM KAZA SAYISI	336.556	91.518	428.074
ÖLÜMLÜ KAZA SAYISI	914	1.798	2.712
YARALANMALI KAZA SAYISI	137.567	46.143	183.710
MADDİ HASARLI KAZA SAYISI(*)	198.075	43.577	241.652
ÖLÜ SAYISI (**)	1.051	2.322	3.373
YARALI SAYISI	205.079	105.030	310.109

1

* Tarafların anlaşarak kendi aralarında tutanak tanzim ettiği maddi hasarlı trafik kaza sayıları dahil edilmemiştir. Bu kapsamdaki bilgilere www.tramer.org.tr internet adresinden ulaşılabilecektir.

** Trafik kazası sonucunda kaza yerinde meydana gelen ölü sayılarını içermektedir.



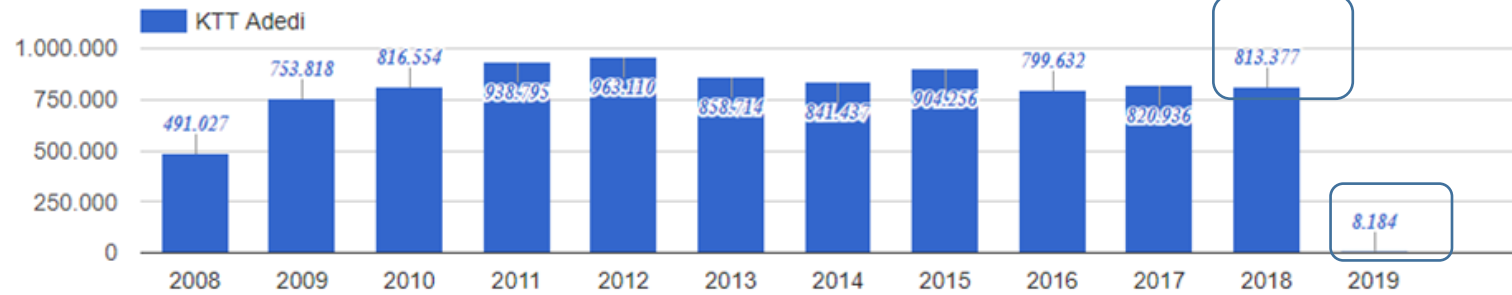
TRAFİK KAZALARI	2019 OCAK		
	YERLEŞİM YERİ	YERLEŞİM YERİ DIŞI	TOPLAM
TOPLAM KAZA SAYISI	26.244	6.824	33.068
ÖLÜMLÜ KAZA SAYISI	63	67	130
YARALANMALI KAZA SAYISI	8.091	2.579	10.670
MADDİ HASARLI KAZA SAYISI(*)	18.090	4.178	22.268
ÖLÜ SAYISI (**)	68	92	160
YARALI SAYISI	11.848	5.672	17.520

2019 YILI

Türkiye

- 2018 yılında EGM kayıtlarına yansımayan Trafik kazası sayısı 813.377'dir.
- 2019 Yılı Ocak ayındaki trafik kazası sayısı ise 8184 olarak rapor edilmiştir.

Kaza Tespit Tutanağı Adetleri (Yıl bazında)



Travma

- Çocuklar ⁽¹⁾
- Yayalar ⁽¹⁾
- Bisikletliler ⁽¹⁾
- Yaşlı insanlar ^(1,3,4,11)
- Major komorbidite ⁽³⁾
- Obesite ^(2,7,8,10)
- Warfarine kullanımı ⁽¹²⁾
- Ciddi kanama ⁽¹¹⁾
- Düşük GKS ⁽¹¹⁾

1. https://www.who.int/violence_injury_prevention/road_traffic/en/
2. Morbid obesity impacts mortality in blunt trauma.Christmas AB, Reynolds J, Wilson AK, Franklin GA, Miller FB, Richardson JD, Rodriguez JL Am Surg. 2007;73(11):1122.
3. Polytrauma in the elderly: predictors of the cause and time of death.Clement ND, Tennant C, Muwanga C Scand J Trauma Resusc Emerg Med. 2010;18:26. Epub 2010 May 13.
4. Differences in mortality between elderly and younger adult trauma patients: geriatric status increases risk of delayed death.Perdue PW, Watts DD, Kaufmann CR, Trask AL J Trauma. 1998;45(4):805.
5. The impact of premorbid conditions on temporal pattern and location of adult blunt trauma hospital deaths.Bamvita JM, Bergeron E, Lavoie A, Ratte S, Clas D J Trauma. 2007;63(1):135.
6. Effect of pre-existing medical conditions on in-hospital mortality: analysis of 20,257 trauma patients in Japan.Shoko T, Shiraishi A, Kaji M, Otomo Y J Am Coll Surg. 2010;211(3):338.
7. Morbid obesity predisposes trauma patients to worse outcomes: a National Trauma Data Bank analysis. Ditillo M, Pandit V, Rhee P, Aziz H, Hadeed S, Bhattacharya B, Friese RS, Davis K, Joseph B J Trauma Acute Care Surg. 2014;76(1):176.
8. Obesity and vehicle type as risk factors for injury caused by motor vehicle collision. Donnelly JP, Griffin RL, Sathiakumar N, McGwin G Jr J Trauma Acute Care Surg. 2014 Apr;76(4):1116-21.
9. Patterns of injury, outcomes, and predictors of in-hospital and 1-year mortality in nonagenarian and centenarian trauma patients. Hwabejire JO, Kaafarani HM, Lee J, Yeh DD, Fagenholz P, King DR, de Moya MA, Velmahos GC JAMA Surg. 2014;149(10):1054.
10. The effect of obesity on outcomes in trauma patients: a meta-analysis. Liu T, Chen JJ, Bai XJ, Zheng GS, Gao W Injury. 2013 Sep;44(9):1145-52. Epub 2012 Dec 4.
11. Predicting early death in patients with traumatic bleeding: development and validation of prognostic model. Perel P, Prieto-Merino D, Shakur H, Clayton T, Lecky F, Bouamra O, Russell R, Faulkner M, Steyerberg EW, Roberts I BMJ. 2012;345:e5166. Epub 2012 Aug 15.
12. Prevalence and implications of preinjury warfarin use: an analysis of the National Trauma Databank. Dossett LA, Riesel JN, Griffin MR, Cotton BA Arch Surg. 2011;146(5):565. Epub 2011 Jan 17.

Travma

- Warfarin kullanımı, diğer önemli risk faktörlerini ayarladıktan sonra, travma sonrası ölüm riskinin yaklaşık yüzde 70 artmasıyla ilişkilendirilmiştir
- Odd oranı [OR] 1.72;% 95 CI 1.63-1.81.



Travma

- Hız,
- Alkol kullanımı,
- Motosiklet kasklarının kullanımı,
- Emniyet kemerleri
- Çocuk koltukları.

Travma

- Majör travmanın ardından bakımın ilk bir saatinde artan ölüm riskini ve hızlı müdahale ihtiyacını vurgulayan "altın saat" kavramı, baştan beri travma çalışmalarında tanımlanmış ve ders kitaplarında ve öğretim kurslarında tanıtılmıştır.
- Kuşkusuz, hızlı müdahalenin, özellikle savaş alanı yaralanmalarında, yaralı hastaların (örneğin tıkalı solunum yolu, tansiyon pnömotoraks, şiddetli kanama) sonuçlarını iyileştirdiği durumlar vardır.

Travma

- Dallas, 2005
- Travma 678 ölümü incelemişler

Table 2. Description of trauma deaths in Dallas County, 2005

	All (n = 678)	Immediate (n = 416)	Early (n = 199)	Late (n = 63)
Median age (years)	33	35	28	33
Gender: male	81%	80%	87%	70%
Race: white	62%	73%	47%	41%
Intentional	62%	73%	47%	27%
Alcohol related	36%	40%	35%	10%

Changing epidemiology of trauma deaths leads to a bimodal distribution

Mark Gunst, MD, Vafa Ghaemmaghami, MD, Amy Gruszecki, DO, Jill Urban, MD, Heidi Frankel, MD, and Shahid Shafi, MD, MPH

Injury mortality was classically described with a trimodal distribution, with immediate deaths at the scene, early deaths due to hemorrhage, and late deaths from organ failure. We hypothesized that the development of trauma systems has improved prehospital care, early resuscitation, and critical care and altered this pattern. This population-based study of all trauma deaths in an urban county with a mature trauma system reviewed data for 678 patients (median age, 33 years; 81% male; 43% gunshot, 20% motor vehicle crashes). Deaths were classified as immediate (scene), early (in hospital, ≤ 4 hours from injury), or late (>4 hours after injury). Multinomial regression was used to identify independent predictors of immediate and early versus late deaths, adjusted for age, gender, race, intention, mechanism, toxicology, and cause of death. Results showed 416 (61%) immediate, 199 (29%) early, and 63 (10%) late deaths. Compared with the classical description, the percentage of immediate deaths remained unchanged, and early deaths occurred much earlier (median 52 vs 120 minutes). However, unlike the classic trimodal distribution, the late peak was greatly diminished. Intentional injuries, alcohol intoxication, asphyxia, and injuries to the head and chest were independent predictors of immediate death. Alcohol intoxication and injuries to the chest were predictors of early death, while pelvic fractures and blunt assaults were associated with late deaths. In conclusion, trauma deaths now have a predominantly bimodal distribution. Near elimination of the late peak likely represents advancements in resuscitation and critical care that have reduced organ failure. Further reductions in mortality will likely come from prevention of intentional injuries and injuries associated with alcohol intoxication.

Table 1. Trunkey's 1983 classification of immediate, early, and late trauma deaths*

Deaths	Timing*	Location	Cause	Interventions*
Immediate	Minutes	Scene	Nonsurvivable injuries	Injury prevention
Early	Hours	Hospital	Severe injuries, potentially survivable with optimal care	Improved access to trauma care
Late	Weeks	Hospital	Multiple organ failure, sepsis	Improved resuscitation/critical care

*From Trunkey, 1983 (3).

†Timing of death after sustaining injuries.

‡Primary interventions with the most potential to reduce trauma deaths.

personnel and resources to care for the injured, evidence-based protocols for acute care of injuries, advances in critical care medicine, multidisciplinary care of the injured, and an emphasis on rehabilitation and reintegration into society.

The impact of these developments in trauma systems on the outcome of trauma patients is not known. A single study published over a decade ago found a bimodal distribution of trauma deaths, with a persistent peak in immediate deaths and a second peak at 48 hours (5). However, the study population consisted of predominantly blunt injuries from a diverse geographical environment, with inconsistent access to prehospital care and trauma centers across the region. The purpose of the

ver a quarter century ago, Cowley described the "golden

Travma

Nispeten az sayıda hasta yaralanmayı takiben eden 24 saatten sonra ölür. Aksine, ölümlerin çoğu ya olay yerinde ya da hasta bir travma merkezine ulaştıktan sonraki ilk dört saat içinde ortaya çıkar.



Travma

- Sekonder analiz
- 146 ambulans servisi
- 51 level 1,2 travma merkezi
- 1 Aralık 2005- 31 Mart 2007
- Analize, KB 90 ve altı, Solunum sayısı 10'un altı ya da 29 üzeri, GKS 12 ve altı ve ileri havayolu sağlanan hastaları dahil etmişler.
- 806/3656 vaka

EMERGENCY MEDICAL SERVICES/ORIGINAL RESEARCH

Emergency Medical Services Intervals and Survival in Trauma: Assessment of the "Golden Hour" in a North American Prospective Cohort

Craig D. Newgard, MD, MPH
Robert H. Schmicker, MS
Jerris R. Hedges, MD, MS, MMM
John P. Trickett, BScN
Daniel P. Davis, MD
Eileen M. Bulger, MD
Tom P. Aufderheide, MD
Joseph P. Minei, MD
J. Steven Hata, MD, FCCP, MSPH
K. Dean Gubler, DO, MPH
Todd B. Brown, MD, MSPH
Jean-Denis Yelle, MD
Berit Bardarson, RN
Graham Nichol, MD, MPH
and the Resuscitation Outcomes Consortium Investigators

From the Center for Policy and Research in Emergency Medicine, Department of Emergency Medicine, Oregon Health & Science University, Portland, OR (Newgard); the Department of Biostatistics (Schmicker, Bardarson, Nichol), Department of Surgery (Bulger), and University of Washington Clinical Trial Center, University of Washington-Harborview Center for Prehospital Emergency Care (Nichol), University of Washington, Seattle, WA; the Department of Medicine, John A. Burns School of Medicine, University of Hawaii-Manoa, Honolulu, HI (Hedges); the Department of Emergency Medicine (Trickett) and Department of Surgery (Yelle), University of Ottawa, Ottawa, Ontario, Canada; the Department of Emergency Medicine, University of California at San Diego, San Diego, CA (Davis); the Department of Emergency Medicine, Medical College of Wisconsin, Milwaukee, WI (Aufderheide); the Department of Surgery, University of Texas Southwestern Medical Center, Dallas, TX (Minei); the Department of Anesthesia, Division of Critical Care, University of Iowa, Iowa City, IA (Hata); the Legacy Emanuel Trauma Program, Portland, OR (Gubler); and Department of Emergency Medicine, University of Alabama at Birmingham, Birmingham, AL (Brown).

Study objective: The first hour after the onset of out-of-hospital traumatic injury is referred to as the "golden hour," yet the relationship between time and outcome remains unclear. We evaluate the association between emergency medical services (EMS) intervals and mortality among trauma patients with field-based physiologic abnormality.

Methods: This was a secondary analysis of an out-of-hospital, prospective cohort registry of adult (aged ≥ 15 years) trauma patients transported by 146 EMS agencies to 51 Level I and II trauma hospitals in 10 sites across North America from December 1, 2005, through March 31, 2007. Inclusion criteria were systolic blood pressure less than or equal to 90 mm Hg, respiratory rate less than 10 or greater than 29 breaths/min, Glasgow Coma Scale score less than or equal to 12, or advanced airway intervention. The outcome was inhospital mortality. We evaluated EMS intervals (activation, response, on-scene, transport, and total time) with logistic regression and 2-step instrumental variable models, adjusted for field-based confounders.

Results: There were 3,656 trauma patients available for analysis, of whom 806 (22.0%) died. In multivariable analyses, there was no significant association between time and mortality for any EMS interval: activation (odds ratio [OR] 1.00; 95% confidence interval [CI] 0.95 to 1.05), response (OR 1.00; 95% CI 0.97 to 1.04), on-scene

Travma

- Bununla birlikte, zamanlama ve ölüm arasındaki ilişki bir zamanlar düşünülenden daha karmaşık olabilir. Acil ambulans servisleri olay yeri ve taşıma süresi ile travma hastası mortalitesi arasında ilişki bulunamamıştır.



Travma

- Travmatik ölümlerin yaklaşık yarısı, merkezi sinir sistemi (CNS) yaralanmasından, üçte birisi de kan kaybından kaynaklanıyor.

(Epidemiology of traumatic deaths: comprehensive population-based assessment. Evans JA, van Wessem KJ, McDougall D, Lee KA, Lyons T, Balogh ZJ World J Surg. 2010;34(1):158.)

Travmadan ölümler sonuç olarak kanamadan, çoklu organ disfonksiyonu ve kardiyopulmoner arrest şeklinde oluyor.

Travma

- Penetran yaralanmalar (Silahlı çatışma bölgelerinin dışında) dünya çapında travmatik ölümlerin yüzde 15'inden azından sorumludur.

(Epidemiology of major trauma. Søreide K Br J Surg.2009;96(7):697.)

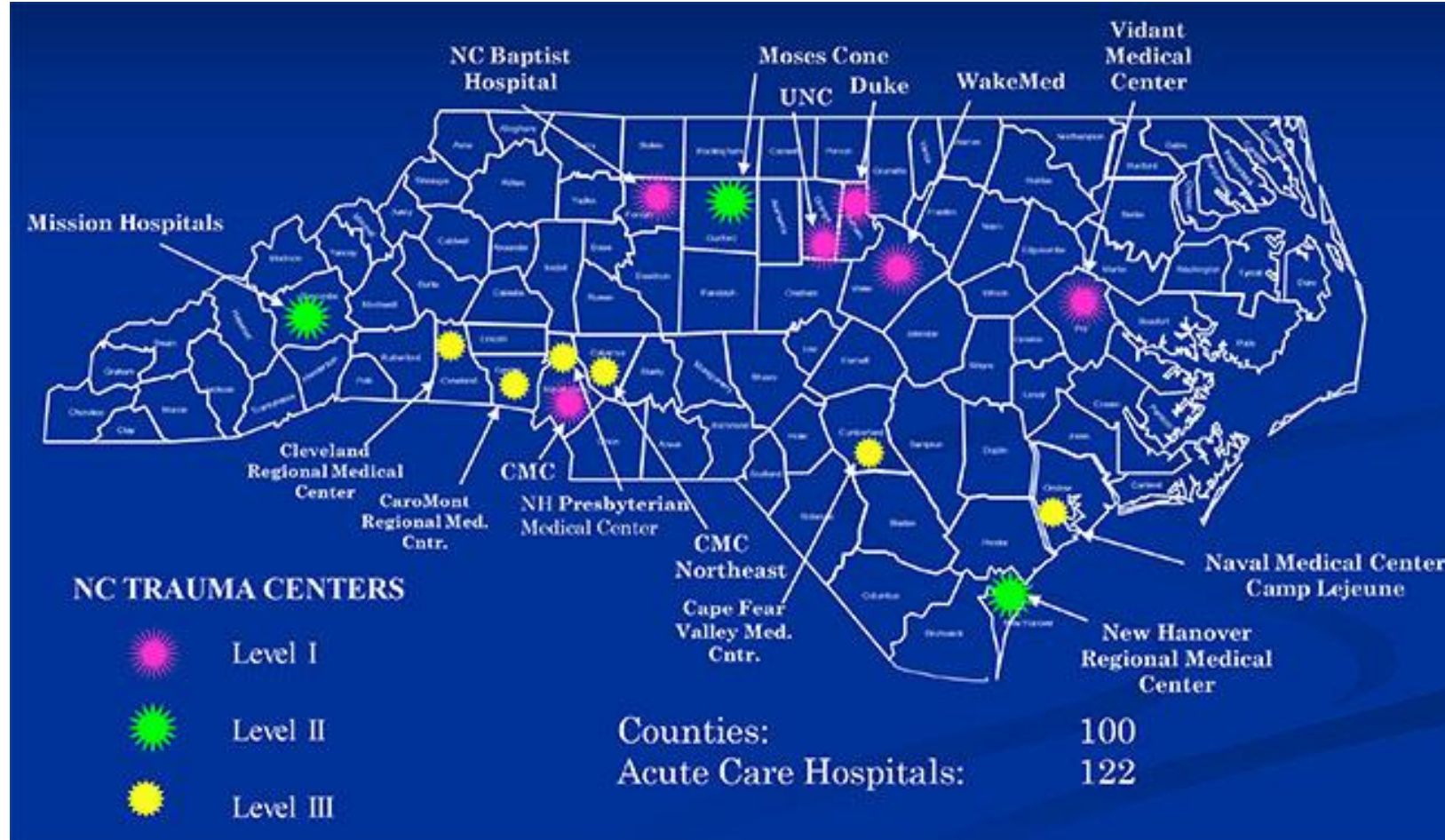
- Örnek olarak, cinayet Los Angeles'taki ölümlerin yüzde 45'ini oluştururken, penetran yaralanmalar Norveç'teki ölümlerin sadece yüzde 13'ünü oluşturuyor.

(Epidemiology of major trauma and trauma deaths in Los Angeles County. Demetriades D, Murray J, Sinz B, Myles D, Chan L, Sathyaragiswaran L, Noguchi T, Bongard FS, Cryer GH, Gaspard DJ J Am Coll Surg. 1998;187(4):373.)

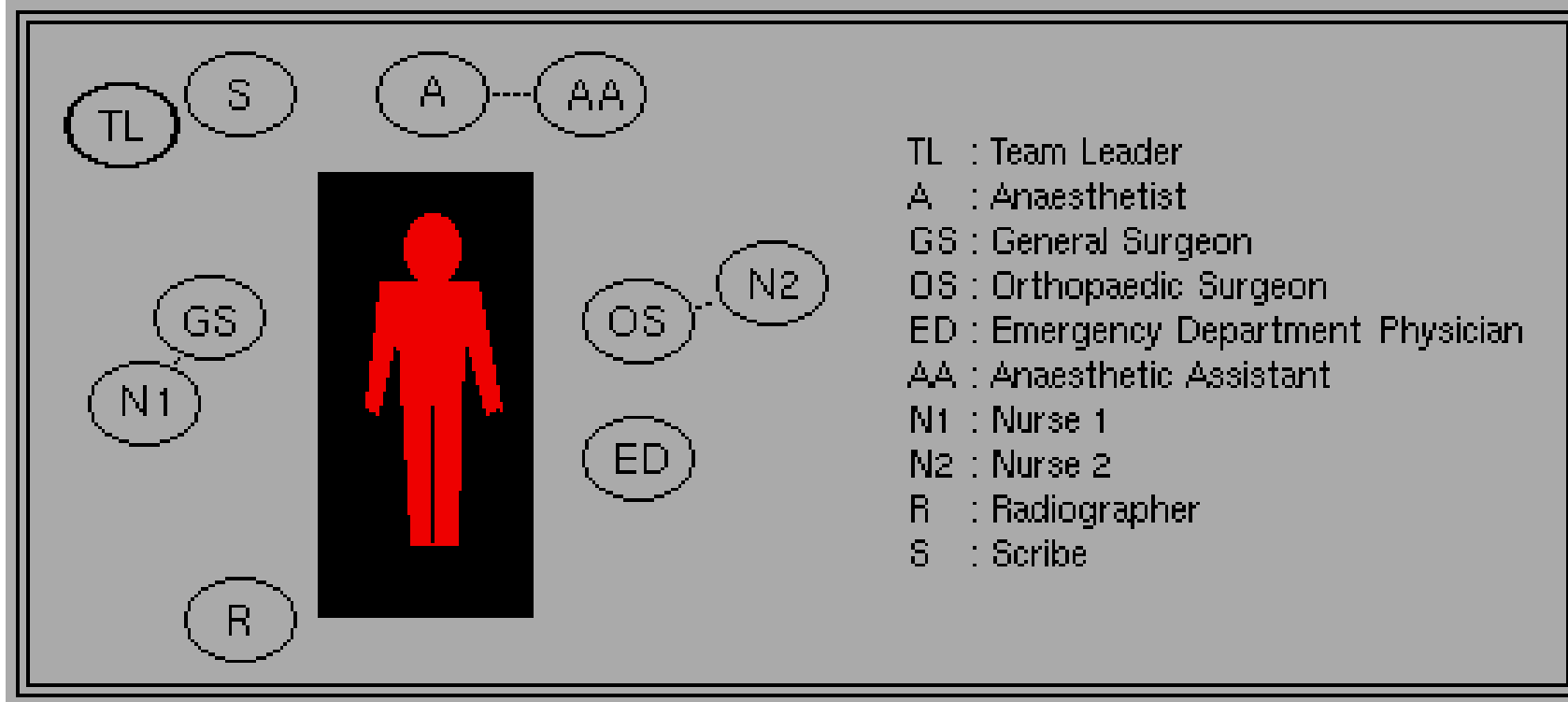
Travma

- En sık karşılaşılan önlenabilir morbidite nedenleri ;
- Erken ekstübasyon,
- Teknik cerrahi başarısızlıklar,
- Gözden kaçan yaralanmalar ve
- İntravasküler kateterle ilişkili komplikasyonlardır.

Sistemler; Dünya



Travma



Türkiye

- Travma yönetimi ile Türkiye genelinde özelleşmiş bir travma sistemi bulunmamaktadır.
- Travma hastaları geldiğinde o günkü nöbetçi ekibin marifetiyle ve ilgili bölümlerden konsültasyon istenerek travma hastalarının bakımı sağlanmaktadır.

Travmada dünyada ve Türkiye de istatistikler ve sistemler

- MacKenzie ve ark. 2006 yılında yaptıkları bir çalışmaya göre travma merkezi olan ve olmayan sistemleri karşılaştırmışlar: Hastane içi ölüm oranları (7.6 % vs. 9.5 %; RR, 0.80; 95 %CI, 0.66 to 0.98) olarak tespit edilmiş.

A national evaluation of the effect of trauma-center care on mortality. MacKenzie EJ, Rivara FP, Jurkovich GJ, Nathens AB, Frey KP, Egleston BL, Salkever DS, Scharfstein DO N Engl J Med. 2006;354(4):366.

Travmada dünyada ve Türkiye de istatistikler ve sistemler

- Ciddi travmatik yaralanmalara sahip hastalar, belirlenmiş bir travma merkezinde tedavi edildiğinde ölümcül ya da morbidite olasılığının anlamlı derecede düşük olduğunu
- Yüzde 10,4'e karşı yüzde 13,8; nispi risk [RR] 0,75,% 95 GA 0,60-0,95.

(A national evaluation of the effect of trauma-center care on mortality. MacKenzie EJ, Rivara FP, Jurkovich GJ, Nathens AB, Frey KP, Egleston BL, Salkever DS, Scharfstein DO N Engl J Med. 2006;354(4):366.)

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- KAYNAKÇA
- https://www.uptodate.com/contents/initial-management-of-trauma-in-adults?search=trauma&source=search_result&selectedTitle=1~150&usage_type=default&display_rank=1
- (https://www.who.int/violence_injury_prevention/road_traffic/en/)
- [https://sbm.org.tr/tr/maddi-hasarli-kaza-raporlari\(ktt\)](https://sbm.org.tr/tr/maddi-hasarli-kaza-raporlari(ktt))
- <http://www.trafik.gov.tr/SiteAssets/istatistik/ocak19.pdf>
- <http://www.trafik.gov.tr/SiteAssets/istatistik/2018.pdf>
- (<https://www.who.int/topics/injuries/en/>)