

Emergency and Disaster Medicine in Kobe, Japan

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Background

Japan

- Located in the Pacific Ring of Fire
 - 90% and 2/3 of the world's earthquakes and volcanoes
- Notable Natural Disasters in Japanese History
 - 1995 Great Hanshin Earthquake (6.9 M_w)
 - 2011 Great East Japan (Tōhoku) Earthquake and Tsunami (9.1 M_w)
- Notable Japanese Events in 2024
 - Noto Earthquake (7.5 M_w) (January 1st)
 - Haneda Airport Runway Collision (January 2nd)
 - Hyūga-nada Earthquake (7.1 M_w) (August 8th) → future Nankai Megathrust implications

Kobe

- 6th largest city in Japan: population 1,540,000
- Origin of Karaoke in the 1970s
- Kobe Beef: <5,000 cattle qualify each year

Kobe University School of Medicine

- ~700 medical students across 6 years
- 6 year curriculum immediately following high school
 - 2 year general (junior) residency across various specialties
 - 2-5 year specialty specific residency
 - Standardized government salary regardless of specialty: ~\$150,000
- Notable Alumni: Shinya Yamanaka, MD PhD, Nobel Prize in Physiology or Medicine for the discovery of induced pluripotent stem cells (iPS)

Program Details

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Week 1						
	KUH: Emergency Medicine	KUH: Emergency Medicine	KUH: Emergency Medicine	KUH: Emergency Medicine	KUH: Emergency Medicine	
Week 2						
Understanding Risk Global Forum	KUH: Emergency Medicine	Understanding Risk Global Forum	Konan Medical Center	Kobe City Medical Center General Hospital	Kobe City Medical Center General Hospital	Tsunami Storm Surge Disaster Prevention Station
Week 3						
Osaka City Life Safety Learning Center	HEMC	HEMC	KUH: Diagnostic & Interventional Radiology	KUH: Diagnostic & Interventional Radiology	KUH: Emergency Medicine	Great Hanshin Earthquake Memorial Museum
Week 4						
	KUH: Infectious Diseases	KUH: Infectious Diseases	KUH: Emergency Medicine	HEMC	KUH: Emergency Medicine	Kyoto Railway Museum

Daily Schedule

- 0830 Morning conference and rounds
- Observe patient care in the ED, ICU, and floors
- Occasional morning lectures with Kobe medical students: Airway Management & Intubation Workshop
- Weekly lunch lectures by various medical vendors
- 1700 Afternoon sign out, conference, and rounds

Kobe University Hospital (KUH)

Amagasaki Train Derailment

- April 25, 2005 9:19am JST
- 7-car train moving at 72 mph around bend crashes into apartment building
 - Speed limit (43 mph), derailment imminent >66 mph from simulations
- ~700 passengers: 107 fatalities, 562 injured
- Dr. Kotani's Involvement
 - 9:39am: initial report, "5 people injured"
 - 9:40am: incident command center established
 - 9:50am: first patient arrived, followed by 99 more patients within 2 hours
 - Watched Point of View (POV) videos worn by medical providers
 - Responder Reflections
 - Delivering new life whilst surrounded by tragedy
 - Lack of centralized communication network for families of those involved
 - Provider post traumatic stress disorder (PTSD)

Hyogo Emergency Medical Center (HEMC)

- Dedicated trauma-only hospital receiving patients via ambulance only
- Houses Hyogo prefecture's Information Command Center: learned about algorithm developed for distributing mass casualty incident (MCI) patients to appropriate regional hospitals as well as historical case studies of application
- Participated in Japanese Disaster Medical Assistance Team (DMAT) Training
 - One of 3 national training centers in Japan
 - >15,500 members on 1,700 teams
 - Instructors and participants shared experiences from the northernmost snowy island of Hokkaido to the southernmost beach island of Okinawa

Disaster Museums

Great Hanshin Earthquake Memorial Museum & Library

- 300+ anecdotes and artifacts from survivors and first responders

Tsunami Storm Surge Disaster Prevention Station

- 7.0 magnitude earthquake simulator

Osaka City Abeno Life Safety Learning Center

- "Boy/Girl Scout" educational tours

Kyoto Railway Museum

- Shinkansen (bullet train) emergency systems for earthquakes & severe weather

Understanding Risk Global Forum

Hideyasu Kiyomoto

- Mayor & former physician involved in 2011 Great East Japan Earthquake Urban Flood Risk Handbook (Global Facility for Disaster Reduction & Recovery)
- Rio de Janeiro, Brazil; Swat Valley, Pakistan; and Haiti
- Innovative Approaches to Urban Heat Assessment
 - Ahmedabad, India; Cape Town, Tshwane, and Buffalo City, South Africa; Indonesia; Albania; and Bosnia & Herzegovina
- Command & Control: Emergency Preparedness & Response Systems from Around the World
 - Nigeria, Romania, and US Fire Administrator Dr. Lori Moore-Merrell

Rotations Outside Emergency/Disaster Medicine

Diagnostic & Interventional Radiology

- Transcatheter arterial chemoembolization for hepatocellular carcinoma
- Transcatheter mitral valve replacement (TMVR)

Infectious Diseases

- Japanese Spotted Fever vs Rocky Mountain Spotted Fever
- Nara Park Deer Lyme Disease
- Malaria, HIV/AIDS, and Tuberculosis within the context of Japanese history & culture
- *Paragonimus* Fluke: Japanese vs Thai & Korean Cuisine
- Foot (Hoof) and Mouth Disease: Impact on Kobe Beef

Global Health Buddy Program

Current Structure

	Visiting Students	Hosting School
June/July 2023	RWJMS M3s	Kobe M5s
May 2024	Kobe M5s	RWJMS M3s & M2s
June/July 2024	RWJMS M2s	Kobe M5s & M4s
May 2025	Kobe M4s	RWJMS M2s & M1s
June/July 2025	RWJMS M1s	Kobe M4s & M3s

- Interacted with other visiting international medical students at Kobe University without such a structured exchange program
- Running buddy program in collaboration with RWJMS Global Health Interest Group (GHIG), Global Surgery Student Alliance (GSSA), and Office of Global Health for RWJMS' other international partnerships



Takoyaki party with Kobe University's English Speaking Club

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