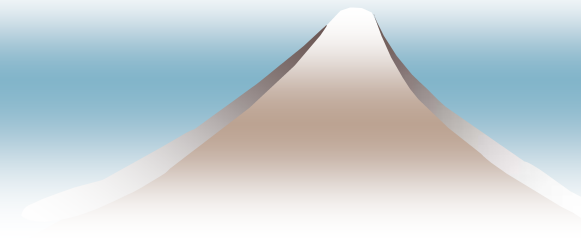


# Humanitarian Work

How can Clinical Engineers get involved?

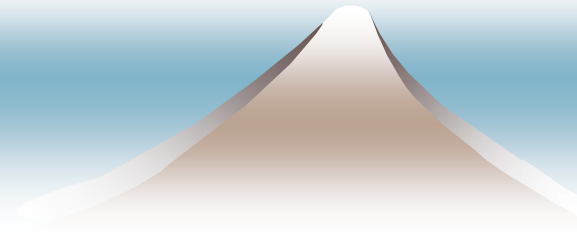
March 08, 2010

**Jean Ngoie**, CEng, IntPE  
Technical Services Manager  
Smiths Medical Canada



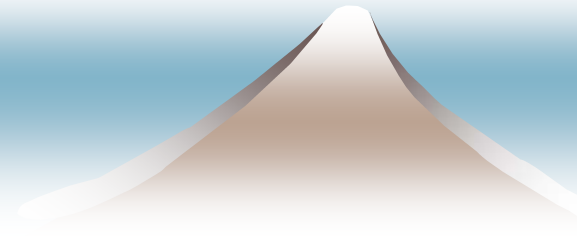
# Disaster

- ◆ Defined as a unpredictable situation or event, which overwhelms local capacity, necessitating a request to national or international levels for external assistance.
- ◆ An unforeseen and often sudden event that causes great damage, destruction and human suffering.



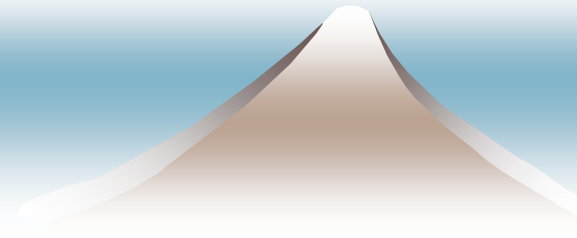
# Disaster impact on humans

- ◆ People affected are those “requiring immediate assistance” during a period of emergency, i.e. requiring basic survival needs such as food, water, shelter, sanitation and **immediate medical assistance**.
- ◆ The number of people killed includes "persons confirmed as dead and persons missing and presumed dead"



# Disaster impact on Economy

- ◆ Direct impact:
  - Damage to infrastructure
  - Crops
  - Housing
- ◆ Indirect impact:
  - Loss of revenues
  - Unemployment
  - Market destabilisation



# Recent natural disasters

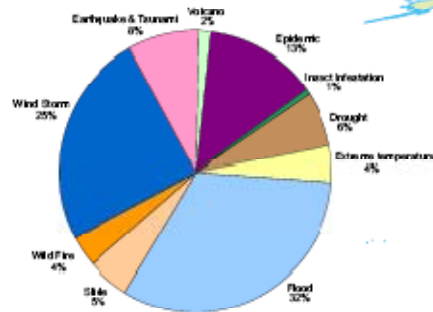
- ◆ **August 29, 2005** Hurricane Katrina put 80% New Orleans under water and bashing the Mississippi coast. More than **1,600 lives** claimed and more than 200,000 homes destroyed.
- ◆ **July - August 2006** record breaking heat wave claim more than **15,000 lives** across Europe and North America. Also straining power grids due to high consumption of electricity.
- ◆ **March 6, 2007** Two earthquakes, magnitudes 6.4 and 6.3, struck the island of Sumatra, claiming **70 lives** and around 7 billion dollars worth of damage.
- ◆ **May 2-3, 2008** Cyclone Nargis, lashes Myanmar claiming more than **135,000** and leaving more than one million homeless.
- ◆ **August 20, 2009** largest tornado outbreak in Canadian history touched down in the GTA. Destroying houses and businesses.
- ◆ **January 12, 2010** Haiti was struck by 7.0 Earthquake destroying most of the country infrastructure including almost all medical centers. Claiming more than **200,000** lives.
- ◆ **February 27, 2010** Conceptione Chili, Earthquake is the last of the series. **700 lives** reported so far.

# Disaster Classification

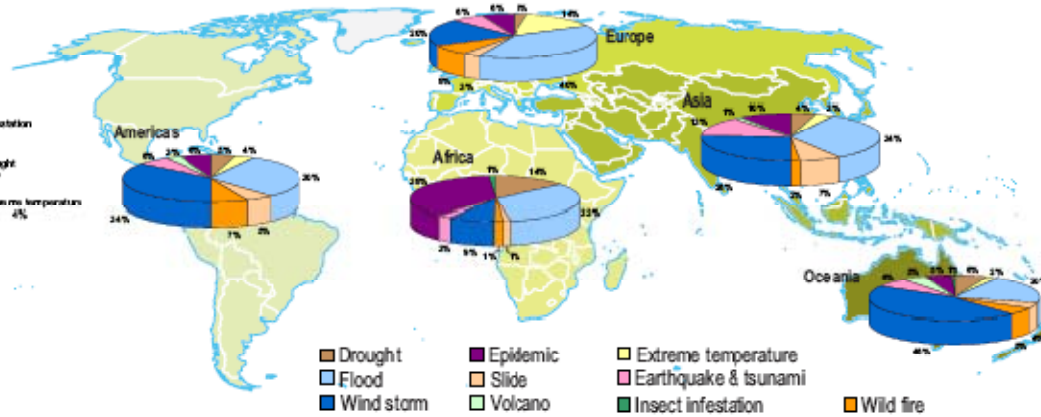
- ◆ Different types of disasters :
  - Natural
  - Technological
  - Other disasters with no classification such as Famine can have the same consequences.

	1900-1909	1910-1919	1920-1929	1930-1939	1940-1949	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999	2000-2005	Total
Hydrometeorological	28	72	56	72	120	232	463	776	1 498	2 034	2 135	7 486
Geological	40	28	33	37	52	60	88	124	232	325	233	1 252
Biological	5	7	10	3	4	2	37	64	170	361	420	1 083
Total	73	107	99	112	176	294	588	964	1 900	2 720	2 788	9 821

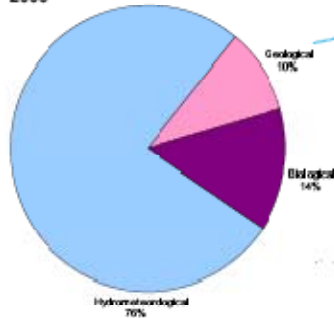
World distribution of disasters by type  
1991 - 2005



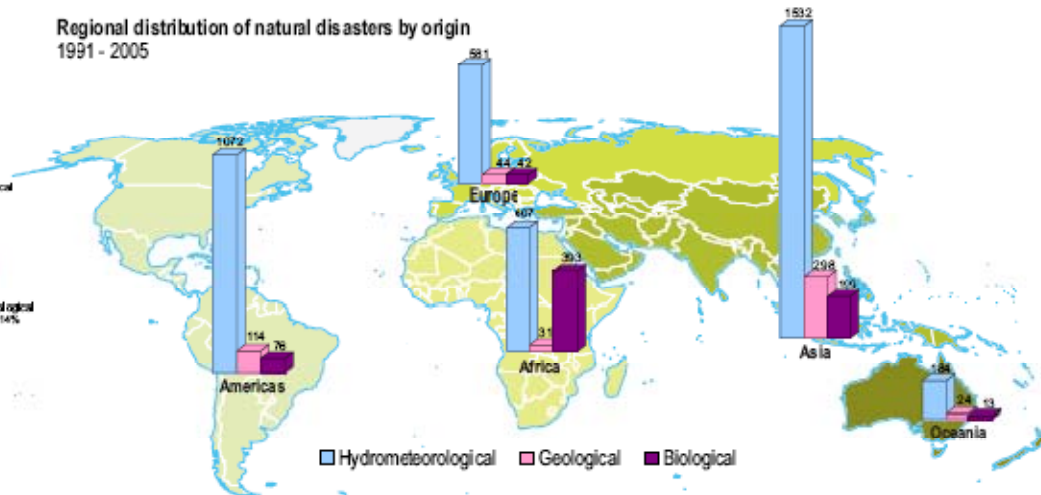
Regional distribution of disasters by type  
1991 - 2005



World distribution of disasters by origin  
1991 - 2005



Regional distribution of natural disasters by origin  
1991 - 2005



# Disaster Statistics by Region

	Hydrometeorological disasters							Geological disasters			Biological disasters			
	Drought	Extreme Temperature	Flood	Slide	Wild Fire	Wind Storm	Total	Earthquake & Tsunami	Volcano	Total	Epidemic	Insect Infestation	Total	Total
<b>Africa</b>														
Eastern Africa	87		132	7	2	46	274	11	3	14	146	3	149	437
Middle Africa	8		37	2	2	1	50	1	1	2	50	2	52	104
Northern Africa	9	6	56	2	2	9	84	12		12	19	2	21	117
Southern Africa	23	1	24	1	7	17	73	2		2	12		12	87
Western Africa	18	2	87	2	2	15	126		1	1	151	8	159	286
Sub-total	145	9	336	14	15	88	607	26	5	31	378	15	393	1031
<b>Americas</b>														
Caribbean	6		44	2	2	95	149	5	4	9	6		6	164
Central America	20	13	82	12	7	76	210	31	19	50	30		30	290
North America	8	11	90	1	56	236	402	10	1	11	9		9	422
South America	23	21	165	46	20	36	311	34	10	44	28	3	31	386
Sub-total	57	45	381	61	85	443	1072	80	34	114	73	3	76	1262
<b>Asia</b>														
Eastern Asia	31	8	132	34	8	219	432	81	5	86	17	1	18	536
South Central Asia	22	47	285	63	7	137	561	95		95	103	4	107	763
South East Asia	25		198	47	13	140	423	56	23	79	61	1	62	564
Western Asia	13	11	57	7	5	23	116	38		38	12		12	166
Sub-total	91	66	672	151	33	519	1532	270	28	298	193	6	199	2029
<b>Europe</b>														
Eastern Europe	7	46	108	10	23	47	241	12		12	19	1	20	273
Northern Europe	2	12	22	2		27	65	2	1	3	6		6	74
Southern Europe	9	19	70	5	25	20	148	22	2	24	10		10	182
Western Europe	1	19	60	6	3	38	127	5		5	6		6	138
Sub-total	19	96	260	23	51	132	581	41	3	44	41	1	42	667
<b>Oceania</b>														
Australia	6	5	36	2	11	49	109	1	1	2	2	2	4	115
Melanesia	5		9	5	1	24	44	11	9	20	5		5	69
Micronesia	2					10	12	1		1	2		2	15
Polynesia	1			2		16	19	1		1	2		2	22
Sub-total	14	5	45	9	12	99	184	14	10	24	11	2	13	221
<b>Total</b>	<b>326</b>	<b>221</b>	<b>1694</b>	<b>258</b>	<b>196</b>	<b>1281</b>	<b>3976</b>	<b>431</b>	<b>80</b>	<b>511</b>	<b>696</b>	<b>27</b>	<b>723</b>	<b>5210</b>

# Why Clinical Engineers should get involved?

- ◆ Traditionally doctors and nurses are the first to be on site to provide emergency healthcare.
- ◆ Today, even their emergency kit consists of complex equipment that requires more than instructions to operate, maintain and service during an emergency.
- ◆ Greater challenges that technology has imposed on doctors, nurses and other healthcare professionals in these situations alone is a justification for us to join them and work side by side.

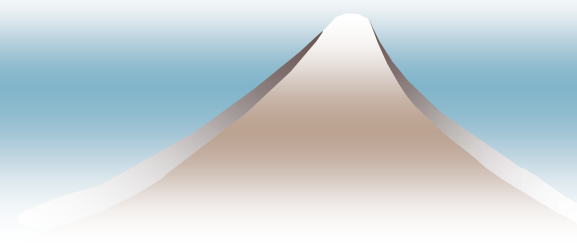


# Why Clinical Engineering?

We have knowledge and experience in:

- The Management of Medical Device programs.
- Troubleshooting, servicing and repairing medical equipment.
- The management of risks associate with the use of medical devices.
- Regulations, best practices and procedures
- Site setting and hospital operations
- Supporting Doctors, Nurses and others in the hospital environment.
- Etc.,

We can help to save lives and make a difference by assisting people in greatest need.



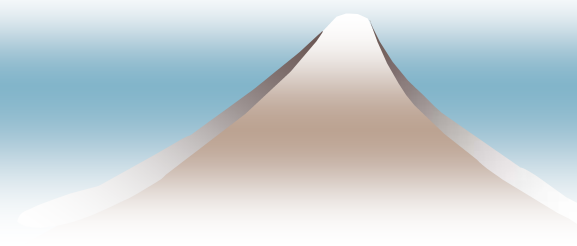
# Why Clinical Engineers?

2007 - 2008 in Canada:

- Registered Physicians: 65,440
- Registered Nurses: 274,274
- Registered CBET (c): 67
- CMBES: 209

Ratio of :

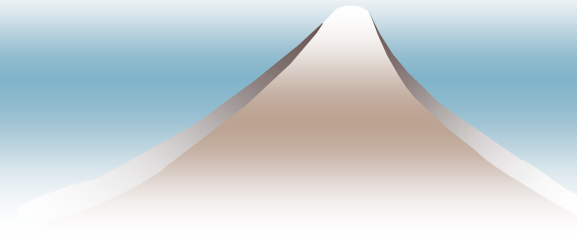
- 1 Doctor for 504 people
- 1 Nurse for 121 people
- 1 Clinical Eng for 157,000 people



# How to get involved?

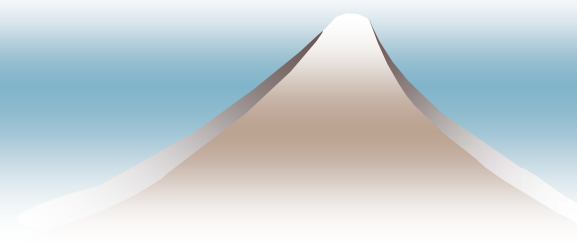
## ◆ 1. Individual Biomed/Clinical Engineer

- Join RedR Canada
- Engineers without borders
- Other similar organizations



## ◆ 2. As a Clinical Engineering Organization

- Generate adequate and predictable **funding**
- Should have a **charitable** status
- Provide adequate **training** on all aspects of Clinical engineering in emergency situations.
- Work in **partnership** with NGO's in need of Clinical Engineering skills.
- Recruit and keep the **volunteers registry**
- Ensure **safety** and **security** of volunteers
- Work with employers to make sure the **financial** interest of volunteers are protected while on assignment.
- The **voice** of our profession



# Conclusion

- ◆ Help other healthcare professionals to save lives
  - ◆ Support people in immediate need
  - ◆ Leave a legacy
  - ◆ Acquire different skills and experience
  - ◆ Exposure to different cultures
  - ◆ Expand our network beyond our borders
  - ◆ Meet new people
  - ◆ Join multidisciplinary teams.
- 
- ◆ **It is the right thing to do!**



# Questions & Discussion

