CURRENT STATUS OF CAMBODIAN SOCIETY OF NEUROSURGERY

AACNS NeuroTrauma Workshop
Cambodia, March 24 -25. 2016

IV – VYCHETH,
CAMBODIAN SOCIETY OF NEUROSURGERY
### Kingdom of Cambodia

| Flag | ![Flag of Cambodia](image) |
| Area  | 181,035 sq. km |
| Population | 15 million |
| Annual population growth rate | 1.54% |
| Life expectancy | 70 Year |
| GDP per Capita | 1380 USD (Average ASEAN GDP/capita: 5000 USD) |
| Health insurances | Just started (in Private sector/NGO) |
Number of Medical Doctors

- Before 1975: 431 Medical Doctor / 7 Million

< Killing field regime 1975-1979 >

- 1979: 21 Medical Doctors survived / 4 Million
- 2016: 6.418 Medical Doctor / 15 Million
- Present: 4,300 peoples / 1 doctor
## Health Educational Systems

<table>
<thead>
<tr>
<th>Type of Medical School</th>
<th>No. of Medical School</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Public Universities:</strong></td>
<td></td>
</tr>
<tr>
<td>1. University of Health Sciences, 1956 (by France)</td>
<td>02 (MD: 8yrs/150/class)</td>
</tr>
<tr>
<td>2. Medical Institute of Royal Arm Forces, 1988</td>
<td>Residency program 4yrs</td>
</tr>
<tr>
<td><strong>Private Medical Universities:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>03 (8yrs/200/class)</td>
</tr>
<tr>
<td><strong>National Nursing schools</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>02 (3yrs)</td>
</tr>
<tr>
<td><strong>Regional School of Nursing care and Midwife</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>04 (3yrs)</td>
</tr>
<tr>
<td><strong>Private schools of Nursing care</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>07 (3yrs)</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>18</td>
</tr>
</tbody>
</table>
# Health Infrastructure Systems

<table>
<thead>
<tr>
<th>Hospital type</th>
<th>No. of Hospitals</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Hospital</td>
<td>08</td>
</tr>
<tr>
<td>Provincial Health Department</td>
<td>24</td>
</tr>
<tr>
<td>Provincial Referral Hospital</td>
<td>79</td>
</tr>
<tr>
<td>Operational District Hospital</td>
<td>77</td>
</tr>
<tr>
<td>NGOs Hospital</td>
<td>06</td>
</tr>
<tr>
<td>Health Center</td>
<td>1010</td>
</tr>
<tr>
<td>Health Post</td>
<td>110</td>
</tr>
<tr>
<td>Private Hospital</td>
<td>11</td>
</tr>
<tr>
<td>Private Clinic</td>
<td>47</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1,372</td>
</tr>
</tbody>
</table>
CAMBODIAN SOCIETY OF NEUROSURGERY AND NEUROSURGEONS
CAMBODIA SOCIETY OF NEUROSURGERY (C.S.N.)

Created since: 1998

President of Society:
2. Prof. Im-Sophorn: 2004 – 2010
4. Prof. Iv-Vycheth: Current President
7 Hospital have Neurosurgeons

< NS Department >  4

1. PREAH KOSSAMAK HOSPITAL
   (I have been worked since 2000 in the second biggest hospital in Cambodia)
2. CALMETTE HOSPITAL
3. MILITARY HOSPITAL

5. Angkor Children Hosp. (NGo)
6. Kuntheak Bopha Hosp. (NGo)
7. Child Surgical Center (NGo)
8. Sokhomal – Sokret polyclinic (Private)
9. Royal P. Penh Hospital (Private)
10. Chorey Hospital (Private)
Members of CSN, (25 NS+14 NS Residents); 860,000 peoples / 1 NS

18 Neurosurgeons trained in abroad and
7 Neurosurgeons trained in Cambodia and
14 NS Resident:

- France / Republic of Korea
- Vietnam / Japan / China / India / Germany.
- 7 Neurosurgeons trained by Me
- 14 NS Residents,
RESIDENCY PROGRAM

• Started since 2012, University of Health Sciences (Under Cambodia MoH, main Curriculum )

• Extra Curriculum(Online course , 4yrs from University of Toronto, Canada with prof. Mojgan Hodaie )

***** Very Important Education to build up the quantity and quality of Youths NS
LOCAL and INTERNATIONAL MEMBERSHIP

• Cambodia Society of Surgery
• ASEAN Neurological Science and Neurosurgery
• AACNS
• WFNS
COOPERATIONSHIP and SUPPORTS

• Cambodia Ministry of Health, MoH
• World Health Organization, WHO
• Korean Neurosurgical society, KNS
• Korean-American Spine Society, KASS
• Japanese Neurosurgery Society, JNS
• HCM Spine Society, Vietnam, HSSV
ACTIVITY OF C.S.N.

Organized:

- the First WFNS Educational Course, P.Penh, January 2012
- Cambodia Spine Seminar 2014
- Cambodia Society of Neurosurgery congress (every years)
Department of Neurosurgery
Preah-kossamak Hospital

- Established 2010
- 30 beds (Occupational patient rate > 30)
- Neurosurgeons 04
- Fellowships 02
- NS Residents 04
- Nurses: 10
DIAGNOSTIC FACILITY

- Laboratory, Clinical Pathology (2008)
- CT SCAN: 1 (2011)
- No MRI & no Angiography machine
- Tele Medicine (2013),

In whole Cambodia
- CT more than 10
- MRI 5,
Tele Medicine

- Inter Governmental Project, Cambodia – Korea
- Donated by Korean Government, 2013
- Cambodia MoH (3 Major Hospital + 1 local Private Clinic)
- Korea: University of Soon Chun Hyang and B.I.T. Computer,
  - Developed medical IT experiences and advanced health care service in Cambodia.
IHTM and On Line Consultation 2014-15, Total 623 case

- Neuro: 539 case (8%)
- OBGY: 52 case (1%)
- Pneumo: 14 case (1%)
- Cardio: 8 case (1%)
- ENT: 3 case (1%)
- Inert. Med: 4 case (1%)
- Patho: 3 case (1%)

87%
TRAINING PROGRAM TO YOUNG N.S.
14 million additional neurosurgical procedures are needed each year globally*

*assumption: 10% of unmet surgical needs are neurosurgeries

GLOBALNEUROSURGERY.ORG

9/10 do not have access to surgical care*

*in low income countries, Report from the Lancet Commission on Global Surgery
Foreigners Fellowship

USA
Malaysia
USA
USA

Germany
USA
USA
USA
USA
SITUATION OF NEUROTRAUMA IN CAMBODIA
Repartition of Neurosurgeons

- **Siem Reap Province**: 2 NS
- **B.T. Bang Province**: 2 NS
- **P. Penh**: 21 NS
- **Populations**: 15 Million
- **Cities and Provinces**: 25
- **Capital**: Phnom-Penh
- **1 NS = 860,000 person**
MECANISMS OF NEUROTRAUMA
Department of NS, PKS Hosp. 2014, 376 case

- Road traffic accident: 82%
- Work accident: 16%
- Sport accident: 1.5%
- Assault and other: 2%
Combined with polytraumatic

- NeuroTrauma: 73%
- Combined with polytraumatic: 27%
Census 2014, NS Depart.PKS, 367 case

- T.B.I. 233
- Cervical 46
- Thoraco-Lumbar 88

T.B.I. 63%

SPINE TRAUMA 37%

Cervical 13%
Thoraco-lumbar 24%
R.T.A. are a first ranging murdered in Cambodia and those figures increasing rapidly,

Also strong and dramatic Impact on Economic and Health Care System of the Country.
Noted from Cambodia Road Crash Victim Information System (CRCVIS)

- **Human error**: contributed to 95% of crashed:
  1. Over speed and Motorcycles without Helmets, rate over 50% of fatalities
  2. Drunk driving, 16% of fatalities
  3. Overtaking, 10% of fatalities

- **Transport facility defects**: 2.6% of crashed
- **Road Environment** around 0.83% of crashed
Cambodia Road Crash and Victim Information System
Annual Report 2013

In 2013, the highest number of fatalities was observed in Phnom Penh (282), followed by Kampong Cham province (187) and Kandal province (124).

Table 12: Number of fatalities by capital and provinces, 2008 – 2013

<table>
<thead>
<tr>
<th>Capital and Provinces</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>%</th>
<th>2013 v 2012</th>
<th>Change</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banteay Meanchey</td>
<td>92</td>
<td>110</td>
<td>89</td>
<td>98</td>
<td>84</td>
<td>82</td>
<td>4%</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Battambang</td>
<td>84</td>
<td>94</td>
<td>101</td>
<td>115</td>
<td>123</td>
<td>84</td>
<td>4%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kampong Cham</td>
<td>199</td>
<td>221</td>
<td>238</td>
<td>233</td>
<td>184</td>
<td>187</td>
<td>10%</td>
<td>-93 -32%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kampong Chhnang</td>
<td>51</td>
<td>57</td>
<td>42</td>
<td>75</td>
<td>64</td>
<td>88</td>
<td>5%</td>
<td></td>
<td></td>
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<tr>
<td>Kampong Speu</td>
<td>75</td>
<td>53</td>
<td>67</td>
<td>56</td>
<td>87</td>
<td>78</td>
<td>4%</td>
<td></td>
<td></td>
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<tr>
<td>Kampong Thom</td>
<td>62</td>
<td>98</td>
<td>104</td>
<td>105</td>
<td>111</td>
<td>100</td>
<td>5%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kampot</td>
<td>24</td>
<td>30</td>
<td>57</td>
<td>60</td>
<td>57</td>
<td>77</td>
<td>4%</td>
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<tr>
<td>Kandal</td>
<td>223</td>
<td>200</td>
<td>196</td>
<td>149</td>
<td>135</td>
<td>124</td>
<td>6%</td>
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<tr>
<td>Kep</td>
<td>9</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>11</td>
<td>6</td>
<td>0%</td>
<td></td>
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<tr>
<td>Koh Kong</td>
<td>48</td>
<td>23</td>
<td>25</td>
<td>27</td>
<td>34</td>
<td>21</td>
<td>1%</td>
<td></td>
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<tr>
<td>Kratie</td>
<td>45</td>
<td>61</td>
<td>81</td>
<td>70</td>
<td>76</td>
<td>93</td>
<td>5%</td>
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<tr>
<td>Mondol Kiri</td>
<td>10</td>
<td>5</td>
<td>26</td>
<td>22</td>
<td>17</td>
<td>15</td>
<td>1%</td>
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<tr>
<td>Addar Meanchey</td>
<td>30</td>
<td>42</td>
<td>25</td>
<td>17</td>
<td>48</td>
<td>43</td>
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<tr>
<td>Pailin</td>
<td>7</td>
<td>4</td>
<td>10</td>
<td>9</td>
<td>19</td>
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<tr>
<td>Phnom Penh</td>
<td>297</td>
<td>251</td>
<td>189</td>
<td>278</td>
<td>296</td>
<td>282</td>
<td>14%</td>
<td>-14 -5%</td>
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<tr>
<td>Preah Sihanouk</td>
<td>52</td>
<td>43</td>
<td>62</td>
<td>87</td>
<td>73</td>
<td>83</td>
<td>4%</td>
<td></td>
<td></td>
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<tr>
<td>Preah Vihear</td>
<td>16</td>
<td>22</td>
<td>27</td>
<td>35</td>
<td>45</td>
<td>48</td>
<td>2%</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Prey Veng</td>
<td>56</td>
<td>70</td>
<td>87</td>
<td>106</td>
<td>104</td>
<td>107</td>
<td>5%</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Pursat</td>
<td>42</td>
<td>70</td>
<td>61</td>
<td>74</td>
<td>81</td>
<td>62</td>
<td>3%</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Rotanak Kiri</td>
<td>19</td>
<td>22</td>
<td>38</td>
<td>35</td>
<td>42</td>
<td>61</td>
<td>3%</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Siem Reap</td>
<td>76</td>
<td>84</td>
<td>132</td>
<td>75</td>
<td>97</td>
<td>92</td>
<td>5%</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Stung Treng</td>
<td>9</td>
<td>17</td>
<td>28</td>
<td>20</td>
<td>20</td>
<td>29</td>
<td>1%</td>
<td></td>
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</tr>
<tr>
<td>Svay Rieng</td>
<td>47</td>
<td>70</td>
<td>44</td>
<td>56</td>
<td>66</td>
<td>64</td>
<td>3%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Takeo</td>
<td>64</td>
<td>66</td>
<td>81</td>
<td>93</td>
<td>91</td>
<td>106</td>
<td>5%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1638</td>
<td>1717</td>
<td>1816</td>
<td>1905</td>
<td>1966</td>
<td>1950</td>
<td>100%</td>
<td></td>
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</tbody>
</table>

Reported of CRCVIS 2013
## CRCVIS Reported

<table>
<thead>
<tr>
<th>Yrs</th>
<th>2008</th>
<th>2011</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Crashed</strong></td>
<td>✓.</td>
<td>✓.</td>
<td>4.645</td>
</tr>
<tr>
<td><strong>Fatalities</strong></td>
<td>1.638 (Average 3 people/day)</td>
<td>1.905</td>
<td>2.226 (Average 7 people/day)</td>
</tr>
<tr>
<td><strong>Severe Injuries</strong></td>
<td>7.226 (63% of patient with head and spine trauma)</td>
<td>5.807</td>
<td>5.671 (71% of patient with head and spine trauma)</td>
</tr>
<tr>
<td><strong>Minor Injuries</strong></td>
<td>15.985</td>
<td>7.661</td>
<td>8.109</td>
</tr>
<tr>
<td><strong>Unknown</strong></td>
<td>947</td>
<td>1.281</td>
<td>331</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>25.796</td>
<td>18.287</td>
<td>16.227</td>
</tr>
</tbody>
</table>
Percentage of casualties by severity of injuries 2014

- Slight injuries: 50%
- Severe injuries: 35%
- Fatalities: 12%
- No injuries: 1%
- Unknown: 2%
- Died on crash site: 72%
- Died during transferring: 7%
- Died at hospital: 21%
The fatalities rate in Cambodia compared to Lao and Vietnam 2014

- Cambodia: 13.0 fatalities per 100,000 inhabitants, 7.9 fatalities per 10,000 register vehicle
- Lao PDR: 13.4 fatalities per 100,000 inhabitants, 6.3 fatalities per 10,000 register vehicle
- Viet Nam: 10.2 fatalities per 100,000 inhabitants, 1.5 fatalities per 10,000 register vehicle
Estimated number of fatality, 2011-2020

- Fatalities: National target
- Fatalities: Without additional target
- Fatalities: Reality

Ministry of Interior
Ministry of Health
Ministry of Public Works and Transport
CONCLUSION

- Despite the shortage of training hospitals, medical professionals, diagnostic and operative facilities, Cambodian doctors are doing their best.

- C.S.N. is an important role to increasing the numbers of neurosurgeons and make improving quality of Neurosurgery care in the country.

- C.S.N. is steadily growing with the collaboration of foreign countries.

- We need help from developed countries.