

Risk factors studies and prevention strategy of CCHF in Iran.

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Some of the published works from Iran

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- 3) Sureau P., Klein J.M., Casals J., Digoutte J.P., Salaun J.J., Piazak N., Calvo M.A. Isolation of Thogoto, Wad Medani, Wanowrie and Crimean-Congo Haemorrhagic fever viruses from ticks of domestic animals in Iran. *Ann. Virol.* 1980;131 E:185 - 200.
- 4) Hoogstraal H. The epidemiology of tick-borne Crimean-Congo hemorrhagic fever in Asia, Europe, and Africa. *J Med Entomol* 1979;15:307 - 417.
- 5) Mardani M., Keshtkar Jahromi M., Holakouie Naieni K., Zeinali M., The efficacy of oral ribavirin in the treatment of Crimean-Congo hemorrhagic fever in Iran. *CID* 2003;36:1613-1618.
- 6) Chinikar S, Persson SM, Johansson M, Bladh L, Goya M, Houshmand B, Mirazimi A, Plyusnin A, Lundkvist A, Nilsson M. Genetic analysis of Crimean-congo hemorrhagic fever virus in Iran. *J Med Virol.* 2004;73(3):404-411.
- 7) Izadi S, Holakouie-Naieni K, Madjdzadeh SR, Nadim A. Crimean-Congo hemorrhagic fever in Sistan and Baluchestan province of Iran, a case-control study on epidemiological characteristics. *Int. J. Infect. Dis.* 2004;8(5):299-306.
- 8) Holakouie Naieni K, Izadi S, Chinikar S, Nadim A. Seroprevalence, Incidence and Risk Factors of Crimean-Congo Hemorrhagic Fever in Sistan-va-Baluchestan Province, Iran. *Iranian J Publ Health* 2004;33(4):1-7.
- 9) Jabbari A, Besharat S, Abbasi A, Moradi A, Kalavi K. Crimean-Congo hemorrhagic fever: case series from a medical center in Golestan province, Northeast of Iran (2004). *Indian J Med Sci.* 2006;60(8):327-329.
- 10) Chinikar S., Mazaheri V., Mirahmadi R., Nabeth P., Saron M.F., Salehi Rarisa, Hosseini N., Bouloy M., Mirazimi A., Lundkvist A., Nilsson M., Mehrabi-Tavana A. A serological survey in suspected human patients of Crimean-Congo hemorrhagic fever in Iran by determination of IgM-specific ELISA method during 2000 - 2004. *Arch Iranian Med* 2005;8(1):52-55.
- 11) Garcia S, Chinikar S, Coudrier D, Billecocq A, Hooshmand B, Crance JM, Garin D, Bouloy M. Evaluation of a Crimean-Congo hemorrhagic fever virus recombinant antigen expressed by Semliki Forest suicide virus for IgM and IgG antibody detection in human and animal sera collected in Iran. *J Clin Virol.* 2005;35(2):154-159.
- 12) Chinikar S, Ahmadnejad A, Fayaz R, Mirahmadi N, Hoseini N, Afzali B, Hooshmand M, Bouloy A, Lundkvist M, Nilsson A, Mirazimi A. Survey of Crimean-Congo haemorrhagic fever in Iranian suspected patients by ELISA and RT-PCR method. In: 16th ECCMID; 2006; Lyon, France; 2006.
- 13) Alavi-Naini R, Moghtaderi A, Koohpayeh HR, Sharifi-Mood B, Naderi M, Metanat M, Izadi M. Crimean-Congo hemorrhagic fever in southeast of Iran. *J Infect* 2006;52:378-382.
- 14) Izadi S, Holakouie-Naieni K, Majdzadeh SR, Chinikar S, Nadim A, Rakhshani F, Hooshmand B. Seroprevalence of Crimean-Congo hemorrhagic fever in Sistan-va-Baluchestan province of Iran. *Jpn. J. Infect. Dis.* 2006;59:326-328.

Risk Factors (1)

- The different risk factors that were introduced in these studies were:
 - History of tick bite,
 - History of taking part in Slaughtering of livestock
 - High risk occupations (slaughter house workers, butchers, shepherds, farmers)
 - Contact with livestock
 - Male sex
 - Age
 - Education
 - Living environment (Rural/Urban)
 - Nationality

Risk Factors (2)

- History of tick bite (OR = 106)
 - At most 30% of cases
 - 27 (18%) out of 122 serologically confirmed cases
- Slaughtering
 - History of taking part in slaughtering activity (OR = 7.6)
 - High risk occupations (OR = 5)
 - 27 (18%) out of 122 serologically confirmed cases

Risk Factors (3)

- History of merely contact with livestock (P-value = 0.18)
- History of taking care of livestock at home (even for a short period) (OR = 4 to OR = 8).
- The only important risk factor in 48 (31%) out of 155 serologically confirmed cases.
- Possible explanations for next studies:
 - Unnoticed tick bite.
 - Contact with urine and manure of these livestock

Risk Factors (4)

- Sex
 - Male: job dependent, removed from the model in multivariate analysis
 - Female: sometimes difficult to explain.
 - Contact with freshly prepared raw meat.
 - Contact with livestock and helping with slaughtering and other high-risk activities.

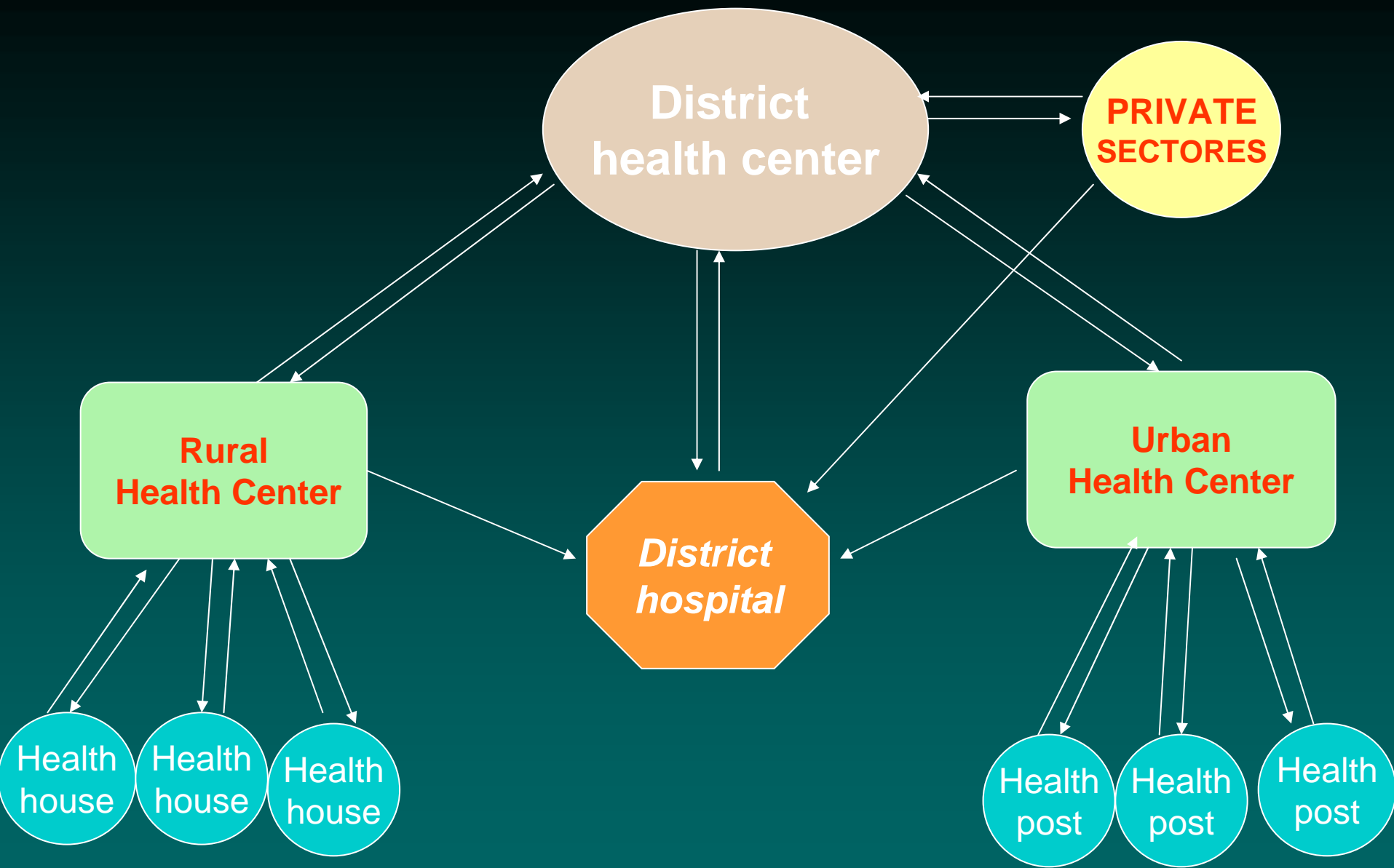
Risk Factors (5)

- Living environment (Rural vs. Urban)
 - In 2 studies it removed from the model in multivariate analysis.
 - In 1 study there was positive relationship with urban areas (all seropositive subjects where dwellers of the urban areas).
 - Does mere mentioning of living in the rural area is enough?
 - What happens in the rural area?
 - Contact with tick
 - or
 - Other high-risk contacts or activities

Risk Factors (6)

- If the findings are not satisfactory, perhaps:
 - We have not asked the right question.
or
 - We have not dug enough.
 - The value of a question can be defined only after hearing the response.

*Prevention strategy of
CCHF in Iran*



DISEASES CONTROL NETWORK IN I.R. IRAN

Ministry of Health

Health Deputy

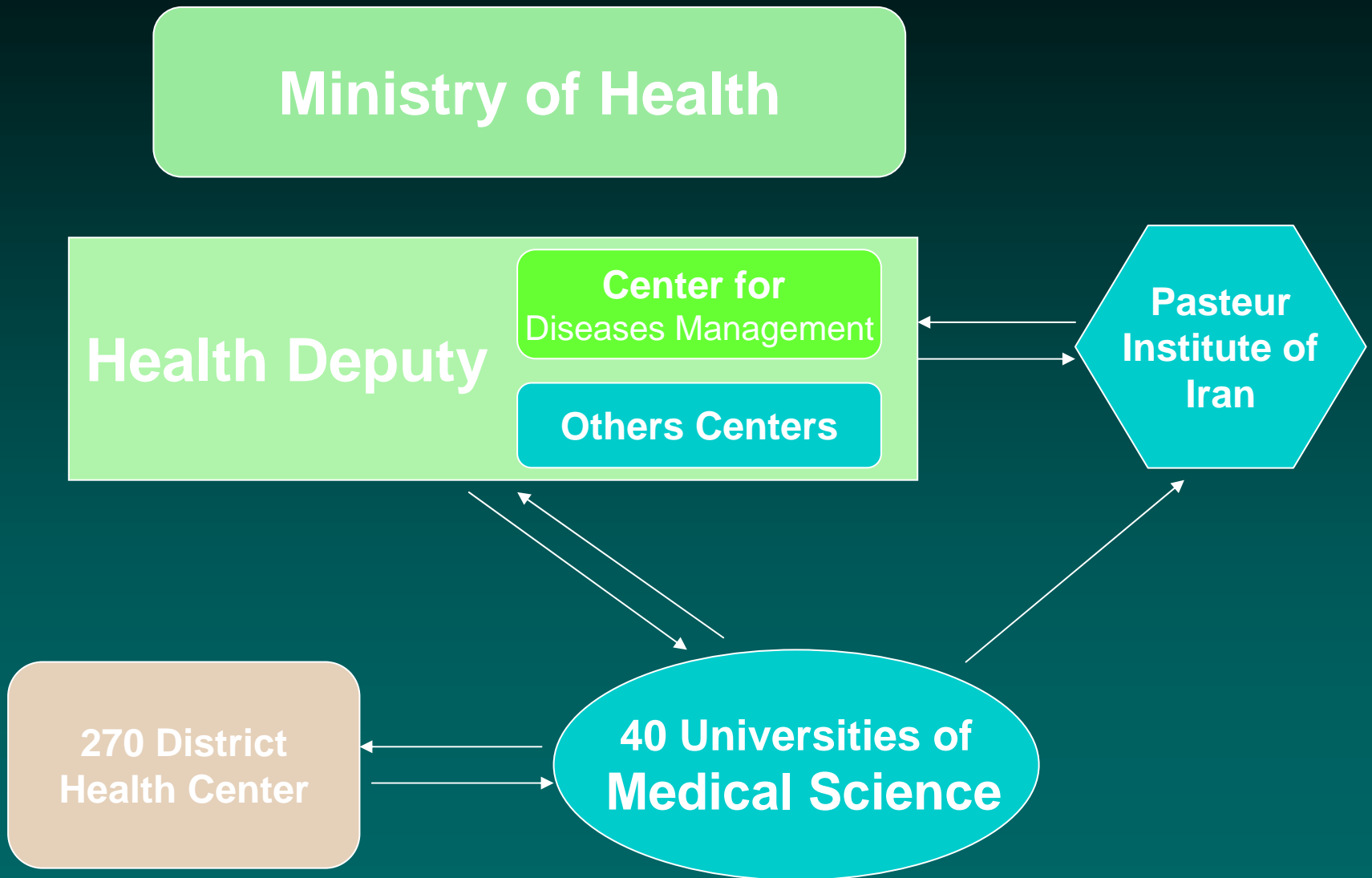
**Center for
Diseases Management**

Others Centers

**Pasteur
Institute of
Iran**

**270 District
Health Center**

**40 Universities of
Medical Science**



Some of the responsibilities of Scientific and administrative committee of CCHF in Iran

1. Development and strengthening of collaborations at the highest levels between the organizations and ministries.
2. Planning, supervision, and monitoring of CCHF management in Universities of Health.
3. Defining the main priorities for scientific research.
4. Providing standard definitions of the disease (suspicious, probable, definite).
5. Providing guide manuals for different levels.

Standard definitions for CCHF

- 1. Suspicious case:** sudden onset of fever + muscular pain + bleeding manifestations + an epidemiologic clues.
- 2. Probable case:** a suspicious case + hematological findings (taking 12 points according to the table of diagnostic criteria).
- 3. Definite case:** a probable case + confirmatory serological or molecular finding.

We appreciate that after this congress, revision of these definitions has to come into consideration by our 'scientific committee'.

- Probable cases would be treated with Ribavirin according to a predefined protocol.
- Suspicious cases would be under supervision and in the case of a 50% reduction in the platelets or WBC count (within the first 3 days of hospitalization) or appearance of other diagnostic findings in favor of CCHF as mentioned above would be treated as a probable case with Ribavirin.
- 3 blood samples would be taken from probable cases: The first blood sample immediately after diagnosis and the 2nd and 3rd samples on the 5th and 10th days after diagnosis.
- After serum isolation and freezing the samples would be sent to the National Arboviral Laboratory of Pasteur Institute of Iran under cold chain regulations.

- Health education of the community to change
 - The attitude
and
 - The behaviour

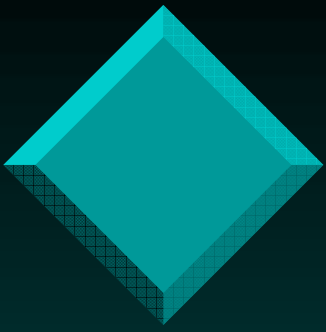
- our first priority has been education of high-risk groups (health workers, hospital staff, physicians, veterinarians, farmers, slaughter house workers, shepherds, butchers, and nomads).

- These groups are taught about using the standard equipments during work and contact with livestock (use of PPE).
- Teaching methods include use of posters, pamphlets, class presentations in the job environment, sending health messages on TV and radio and other common media.
- To reach at slaughterhouse workers, butchers, farmers and other related groups National Veterinary Organization and ministry of agriculture are involved.
- For nurses and physicians, special retraining courses and workshops are implemented annually.
- For high-risk provinces (Sistan-va-Baluchestan, Esfahan and Fars), each year 3 to 5 special workshops for health workers, nurses and physicians.

- In hospitals
 - The suspected cases of CCHF would be isolated.
 - In high-risk regions, all hospitals have a special ward for CCHF, which is active especially during the warm seasons.
 - All hospital staff in these regions have passed special courses about the hazards of contact with suspected cases and all hospital staff annually took part in special retraining courses about regulations of personal protections.
 - In the case of dangerous contact of hospital staff with suspected cases, each worker would be followed for 2 wks. If during these 2 wks fever occurs, Ribavirin therapy would be started according to treatment protocol of suspected cases.
 - In the case of needle stick, ribavirin therapy begins immediately, in addition to 2 weeks of follow up.

- In the case of referral of a suspected case from lower levels (rural health houses, health clinics and private physicians) to district hospitals, after a thorough examination of the patient in the hospital, and confirmation of diagnosis, the following measures would be implemented:
- The Px would be hospitalized in the special isolated ward and all the previously mentioned measures would be implemented.
- All close contact of the cases and household members of the patient would be followed for at least 2 weeks (on an out patient basis) and in the case of occurrence of a febrile episode they would be regarded as a suspected case and would be admitted to the hospital. This is the only instance of active surveillance of CCHF in the system.

- To reach at the community, the health network is involved. One of the main duties of health workers in all levels, especially in the community health centers (rural and urban) is transmission of health messages to community.



- There are also some other measures that are not so effective and we admit that are not followed everywhere:
 - Provision of health documents for livestock industries.
 - Controlling transit and movement of livestock from one province to another.
 - Controlling of movement of livestock between border provinces and Afghanistan and Pakistan.
 - Providing guidelines for tick removal from livestock before slaughtering.
 - Providing different tick removing facilities and technical support of the livestock industry.