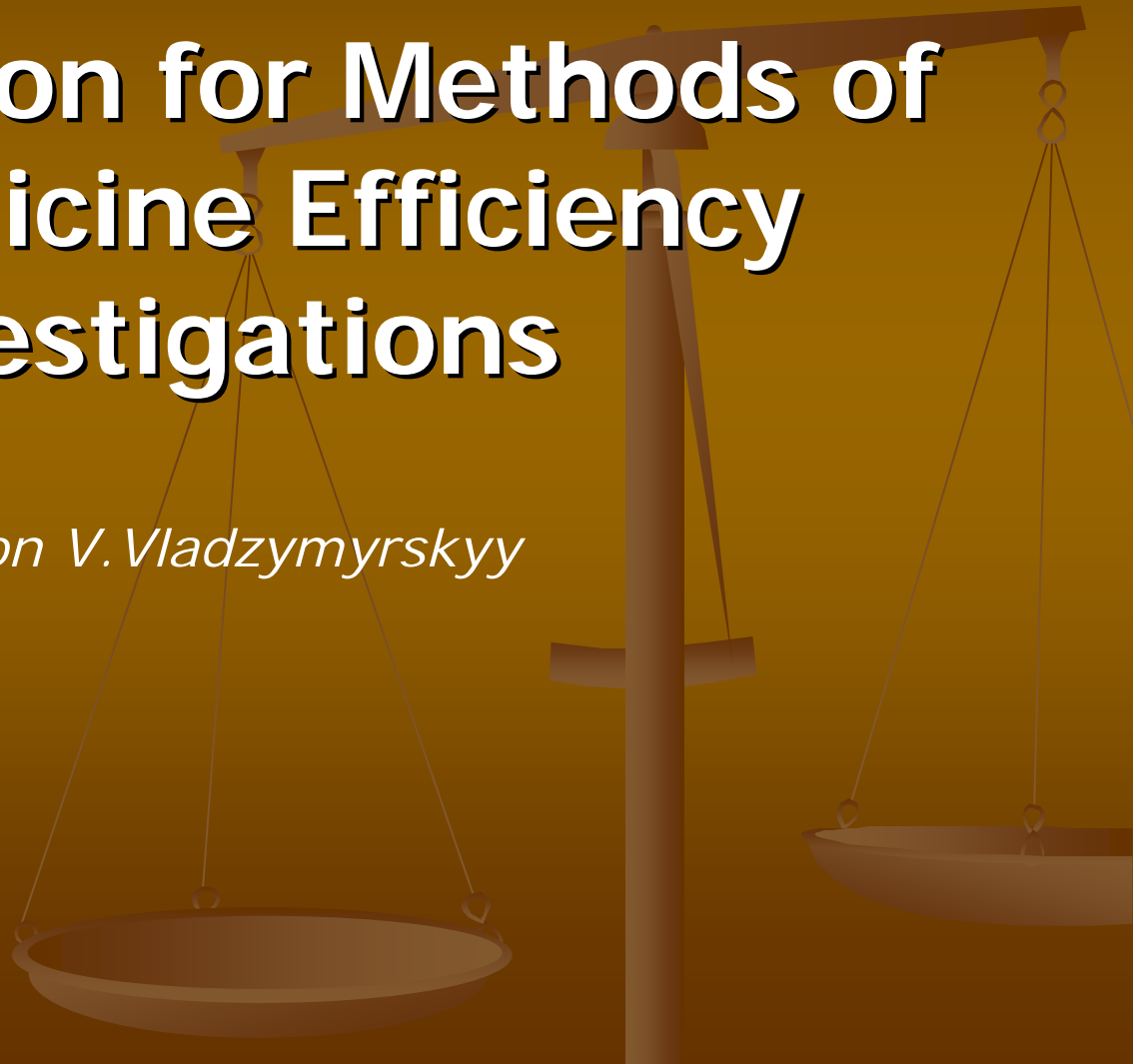


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Classification for Methods of Telemedicine Efficiency Investigations

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- multicentral blind researches of efficiency of various telemedical technologies
- accumulation of databases of best practice models with development of methodical bases for selection of the most effective model
- development of complex techniques for an estimation of efficiency of the telemedicine
- the methodical help in decision-making



Evidence-based Telemedicine



Best Practice Models
Results of Multicentral R&D

Complex Methods of Telemedicine
Efficiency Investigations

Unique economical, medical, social, geographical etc conditions

Recommendations about
creation of work station,
software, documentation etc

**Efficiency
Investigations**

Decision Making

Dr. Noriaki Aoki et al. has propose classification of "telemedicine results" :

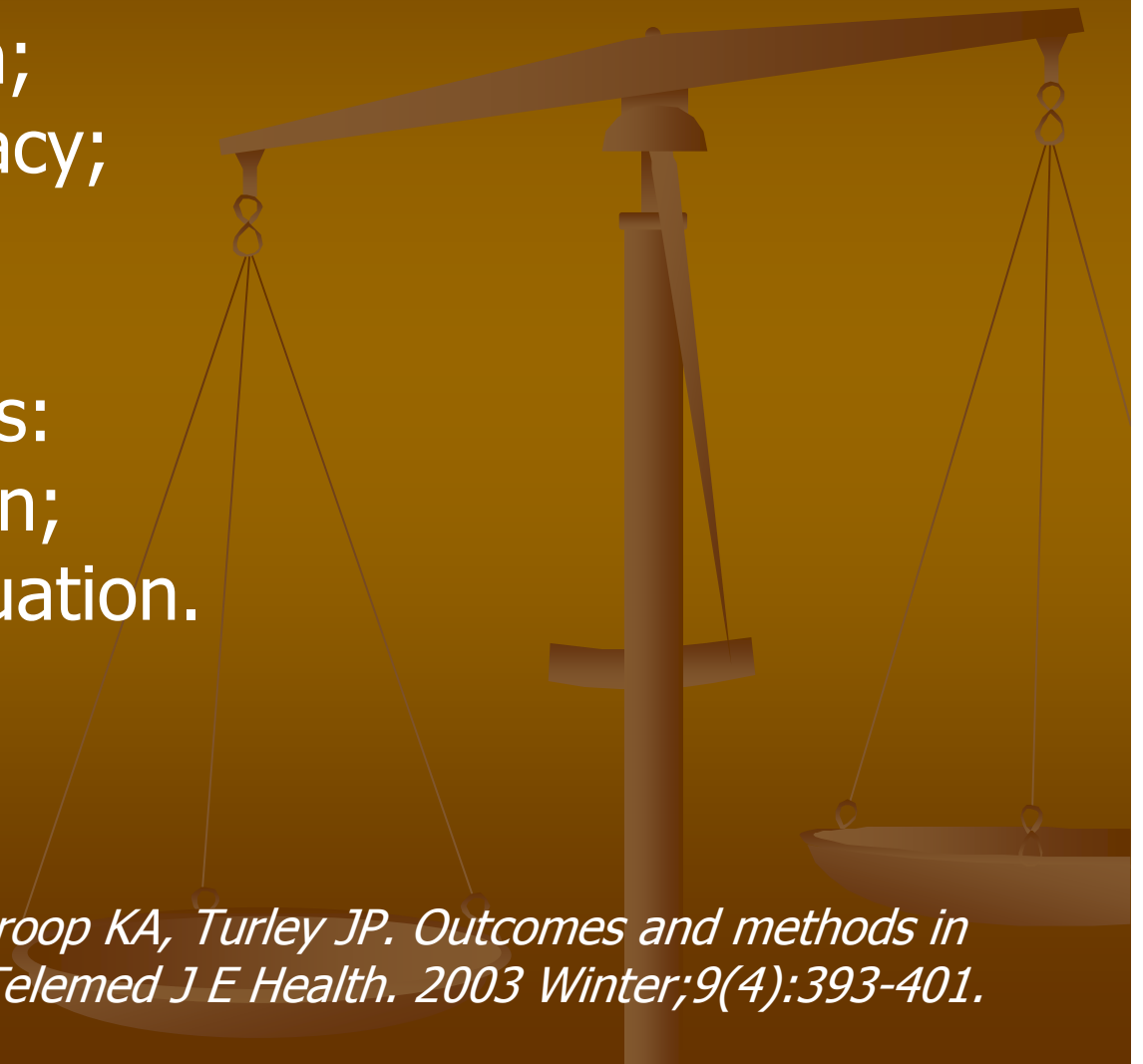
1. Clinical results:

- clinical efficiency,
- patient satisfaction;
- diagnostical accuracy;
- cost.

2. Non-Clinical results:

- technical evaluation;
- management evaluation.

Aoki N, Dunn K, Johnson-Throop KA, Turley JP. Outcomes and methods in telemedicine evaluation. Telemed J E Health. 2003 Winter;9(4):393-401.



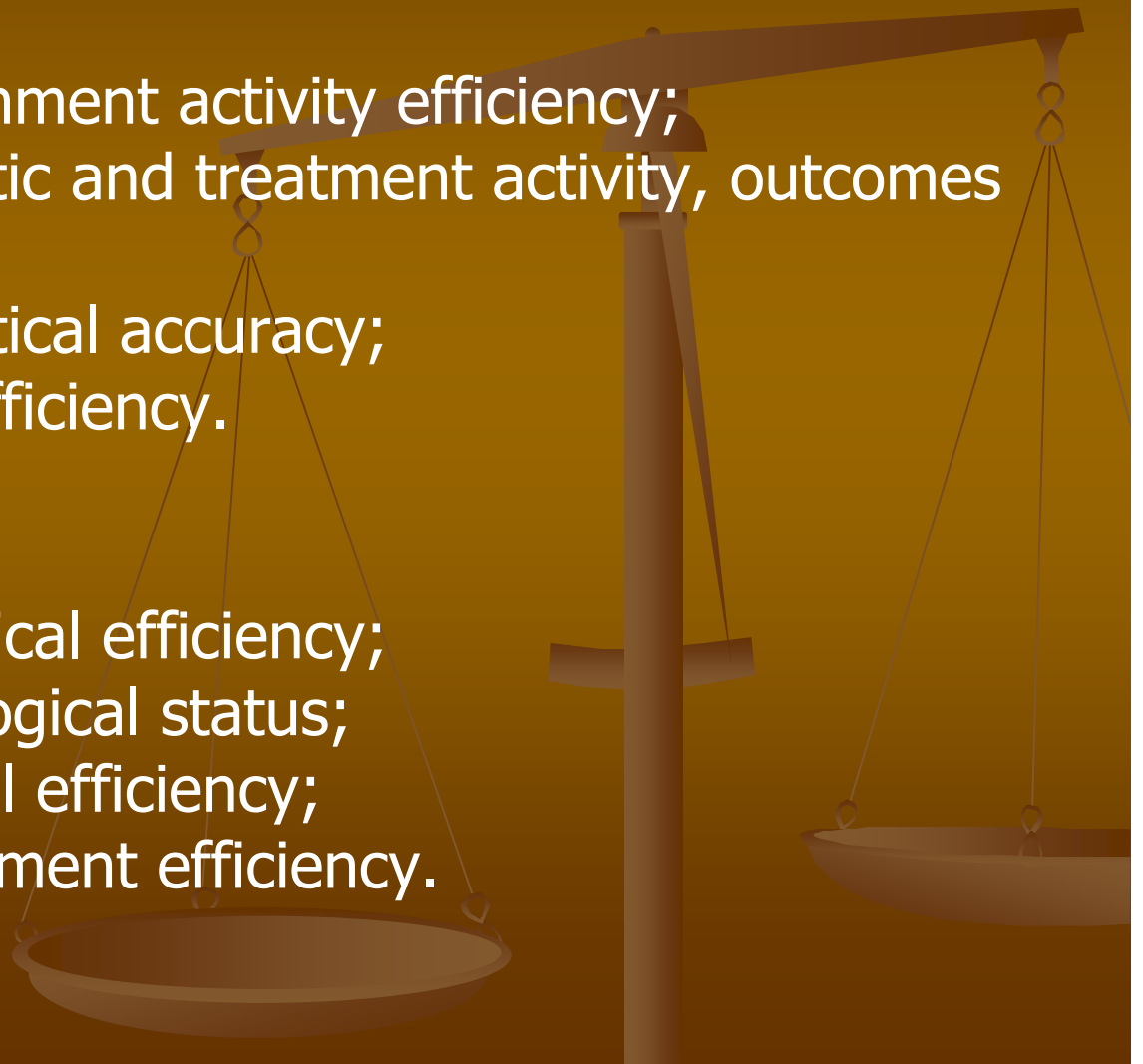
Own classification for methods of telemedicine efficiency investigations:

1. Clinical MTEI:

investigation of establishment activity efficiency;
investigation of diagnostic and treatment activity, outcomes efficiency;
investigation of diagnostical accuracy;
investigation of moral efficiency.

2. Non-clinical MTEI:

investigation of economical efficiency;
investigation of psychological status;
investigation of technical efficiency;
investigation of management efficiency.



Clinical Methods of Telemedicine Efficiency Investigations (MTEI)



Investigation of hospital/institutional activity efficiency

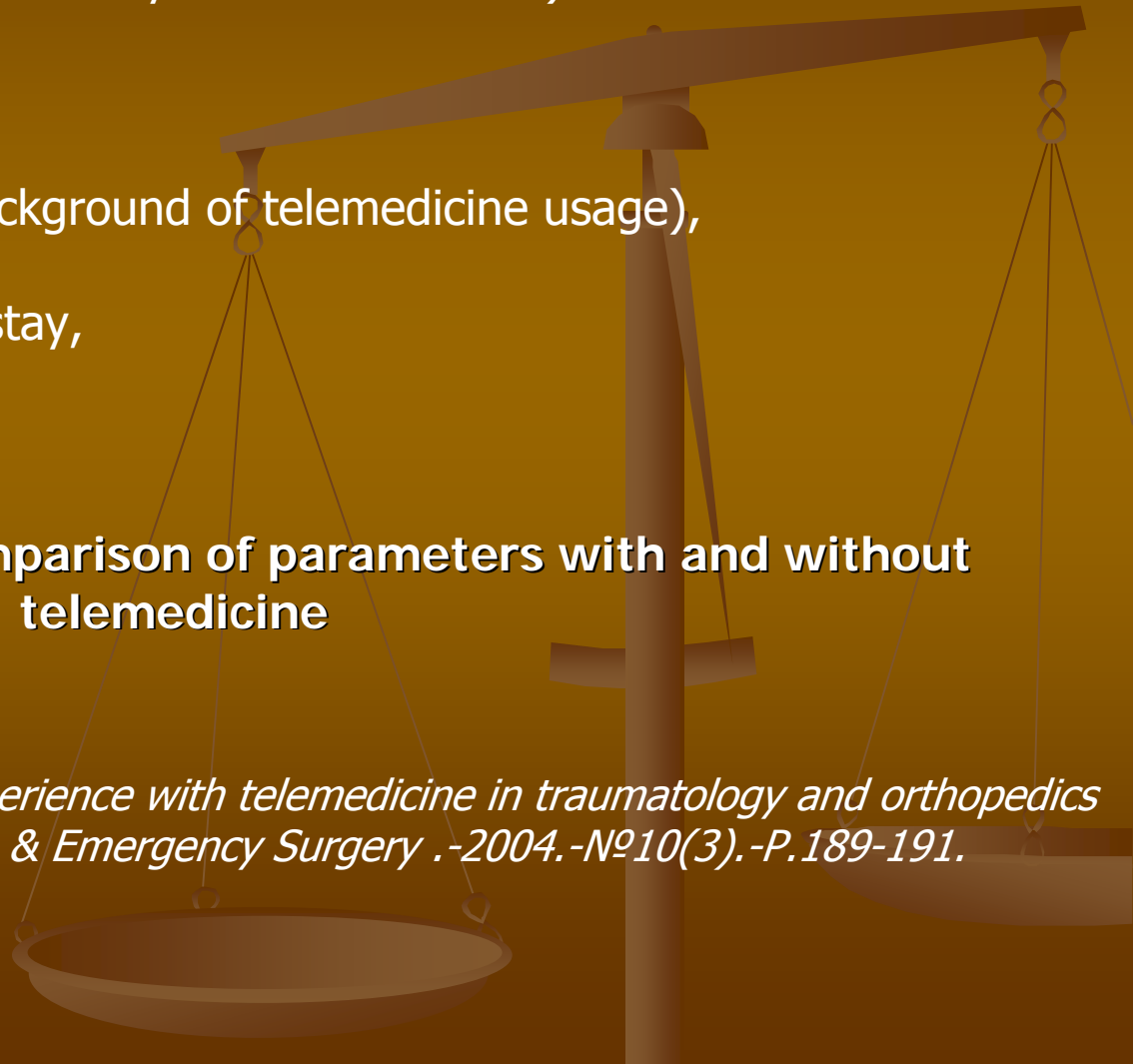
Statistical comparison of various parameters of medical establishments' activity (comparison telemedicine and standard ways for medical care).

Here can concerns:

- level of surgical activity (on the background of telemedicine usage),
- death rate and mortality,
- duration of a pre- and in-hospital stay,
- parameter of re-hospitalization

Main MTEI: statistical comparison of parameters with and without telemedicine

Example: *Vladzomyrskyy A.V. Our experience with telemedicine in traumatology and orthopedics*
// *Turkish Journal of Trauma & Emergency Surgery* .-2004. -№10(3). -P.189-191.



Investigation of diagnostic and treatment activity, outcomes efficiency

Searching for statistical dependences and comparison for various parameters:

- quality of outcomes,
- level of complications,
- level of clinical mistakes,
- death rate and mortality,
- dynamics of results of laboratory tests,
- quality of life,
- survival rate,
- anthropometry changes.

Main MTEI:

- statistical comparison of clinical results with and without telemedicine;
- statistical comparison of medical practitioners activity with and without telemedicine;
- series of teleconsultations for same clinical cases.

Examples: *Whitlock WL, Brown A, Moore K, et al. Telemedicine improved diabetic management. Mil Med 2000; 165:579–584.*

Eysenbach G. Towards ethical guidelines for dealing with unsolicited patient emails and giving teleadvice in the absence of a pre-existing patient-physician relationship systematic review and expert survey. J Med Internet Res. 2000 Jan-Mar;2(1):E1.

Investigation of diagnostical accuracy

The comparative analysis of:

- quality, accuracy and specificity of diagnostics,
- description of the local status,
- and recommendations for treatment with or without telemedicine [9,17].

Main MTEI:

- statistical comparison of diagnostical accuracy for medical visualisation with and without telemedicine;
- comparison of quality of the patient's examination by attending and distant experts;
- comparison of diagnostic value for digital images with various characteristics.

Examples: *Scott W., Rosenbaum J., Ackerman S. Subtle orthopedic fractures: teleradiology workstation versus film interpretation // Radiology. - 1993. - Vol.187, N3. - P.811-855.*
Vidmar DA, Cruess D, Hsieh P, et al. The effect of decreasing digital image resolution on teledermatology diagnosis. Telemed J 1999;5:375-383.

Investigation of moral efficiency

Estimation of moral efficiency or satisfaction of patients and doctors by telemedicine.

For an estimation of satisfaction of the patient use various questionnaires and test, like:

- SF-36,
- Ware Specific Visit Questionnaire,
- Patient Enablement Instrument,
- Short Form-12 etc,
- Questionnaire of the UTHSCSA.

Main MTEI:

- questioning with statistical processing results;
- interview with recording and statistical processing of results.

Examples: *Mair F, Whitten P. Systematic review of studies of patient satisfaction with telemedicine. BMJ 2000;320:1517-1520.*



**Non-Clinical
Methods of Telemedicine
Efficiency Investigations
(MTEI)**



Investigation of economical efficiency

There are methods for estimation of economic efficiency of the telemedicine by Aoki et al. :

- 1) cost-minimization;
- 2) cost-effectiveness;
- 3) cost-utility;
- 4) cost-benefit analysis.

Main MTEI:

- definition of the costs for telemedical service and comparison with same usual medical service;
- comparison of cost and charges for usual and telemedical health care at operation of various kinds of equipment;
- economical estimation and comparison of the telemedical and usual form of health services;
- complex estimation of economical and qualitative efficiency (expediency);
- complex estimation of economical, qualitative and quantitative efficiency (profitability).

Examples: *Castillo-Riquelme MC, Lord J, Moseley MJ, Fielder AR, Haines L. Cost-effectiveness of digital photographic screening for retinopathy of prematurity in the United Kingdom. Int J Technol Assess Health Care. 2004 Spring;20(2):201-*

Investigation of psychological status

Research of the psychological status of various participants of telemedical procedures: patient, remote adviser, attending physician, coordinator, support personnel.

Different test for this aim:

- Lusher's,
- Spielberg-Khanin's,
- Scale of Uneasiness,
- "technique for multilateral research of the person",
- "multifactorial estimated scale of psychosocial changes"

Investigation of technical efficiency

Main MTEI:

- testing of the equipment,
- comparison of accuracy of various telemedical systems (volumes, speed of transfer of the information, loss of quality, an opportunity of registration etc).

Examples: *Shiotsuki H, Okada Y, Ogushi Y, Tsutsumi Y, Kuwahira I, Kawai N, Yamauchi K. Evaluation of image qualities on the international standard video-conferencing. Tokai J Exp Clin Med. 2003 Dec;28(4):151-60.*

Investigation of management efficiency

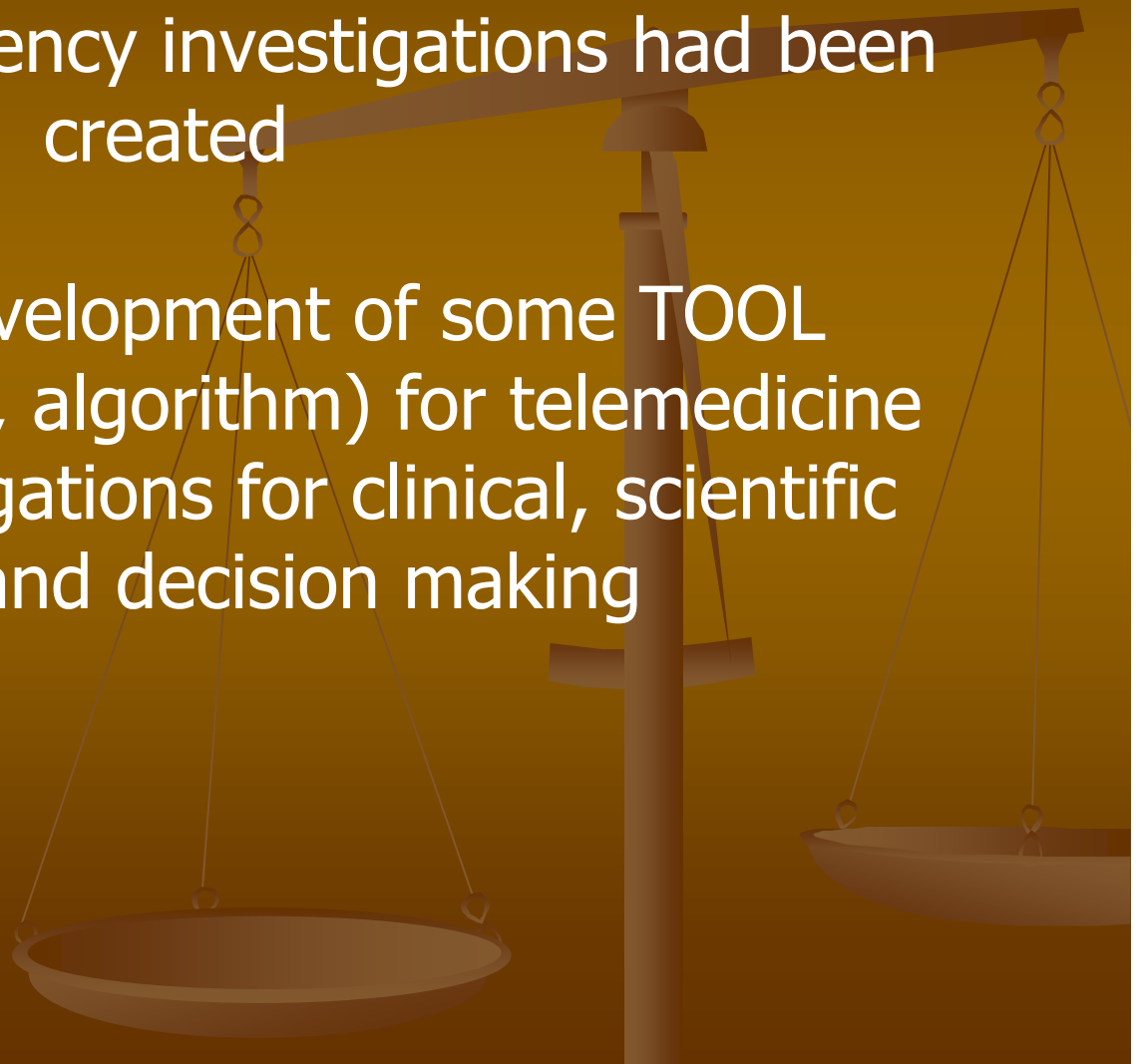
For an estimation of management efficiency of the telemedicine in comparison study:

- time parameter (duration of medical procedure, visit, detour, survey, etc.);
- quantity, duration, productivity of transportations of patients between medical institutions of a different level.

Examples: *Aoki N, Dunn K, Johnson-Throop KA, Turley JP. Outcomes and methods in telemedicine evaluation. Telemed J E Health. 2003 Winter;9(4):393-401.*

Thus, classification for methods of telemedicine efficiency investigations had been created

Next step – development of some TOOL (complex, system, algorithm) for telemedicine efficiency investigations for clinical, scientific practice and decision making



THANK YOU VERY MUCH!



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