

Medical Diagnosis

Group D

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Case Study

- Clinical Decision Support Systems (CDSS): digital support systems (DSS) in the medical domain;
- “... a list of alternative treatments with a probability rating on the success of a given procedure...”;
- “...the statistical probability of a patient dying after admission to a hospital’s intensive care unit in a given state...”.

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Case Study

APACHE: Acute Physiology And Chronic Health Evaluation

- Originally developed in 1981;
- Now in its third release [APACHE III];
- Individual's medical profile compared to 18000 cases after 27 facts are input by attending physician;
- 95% accurate prognosis;
- 40 hospitals worldwide using APACHE participate in on-going studies researching CDSSs.



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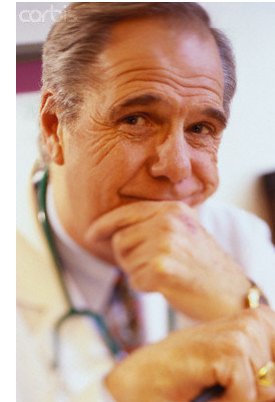
Case Study

- System needs constant maintenance.
- Still depends on data input by attending physician.
- A statistic about the probability of an event bears no causal relationship to that event.
- Doctors with access to such data far more likely than others to terminate care [incomplete study in France].
- Hospital administrators may use such statistics as a road to easier triage.

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Case Study Questions

1. What are the main ethical dilemmas facing a doctor using such a system?
2. What would different ethical theories tell us to do when faced with the possibility of commissioning such a system?
3. Would you, as hospital administrator, commission such a system if the technology was demonstrated to provide accurate statistical results?



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Ethical Theory Background

A	Descriptive Ethics
	(Comparative Ethics)
	Deals with what people believe to be right and wrong.
	Empirical research into the attitudes of people/groups of people.
A.1	Value Theory
	...investigates how people positively and negatively value things and concepts.
B	Normative Ethics
	(Prescriptive Ethics)
	Deals with what people should believe to be right and wrong.
	Develops a set of rules, norms, governing human conduct.
B.1	Consequentialism
B.1.1	Utilitarianism
	...the greatest good for the greatest number.
B.1.2	Ethical Egoism
	...the consequences to the individual matter more than any other result.
B.2	Deontological Theories
B.2.1	The Categorical Imperative
B.2.2	Natural Rights Theories
B.3	Virtue Ethics

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The Rights Approach

“...the correct action is the one that ensures that the stakeholder’s rights have been respected...”⁽¹⁾

- **Patients’ Rights!**
- A right is a justified claim on others.⁽¹⁾
- Immanuel Kant (1724-1804): each person has a worth that must be respected.

⁽¹⁾ Manuel Velasquez, Claire Andre, Thomas Shanks, S.J., and Michael J. Meyer: Markkula Center for Applied Ethics.

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1. Each and every patient has the right to expect that his medical records be properly protected and secure.
2. Each and every patient has the right to the best medical resource available.
3. Each and every patient has the right to freely choose for oneself (whether or not to continue the treatment prescribed).

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- 1 Each and every patient has the right to expect that his medical records be properly protected and secure.

“The right against unsanctioned invasion of privacy by the government, corporations or individuals is part of many countries' privacy laws, and in some cases, constitutions.”⁽²⁾

⁽²⁾ <http://en.wikipedia.org/wiki/Privacy>

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- 2 Each and every patient has the right to the best medical resource available.

“Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control.”

(Article 25 of the Universal Declaration Of Human Rights.)

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- 3 Each and every patient has the right to freely choose for oneself (whether or not to continue the treatment prescribed).

“The right to Choose” often claimed to be a Natural Right by philosophers (example Hadley Arkes).

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The Rights Approach Conclusion:

Clinical Decision Support Systems benefit the patient...but do all patients benefit from CDSSs?

Dilemma: Rationing of Medical Resources⁽³⁾

Dilemma: Profits vs Healthcare.

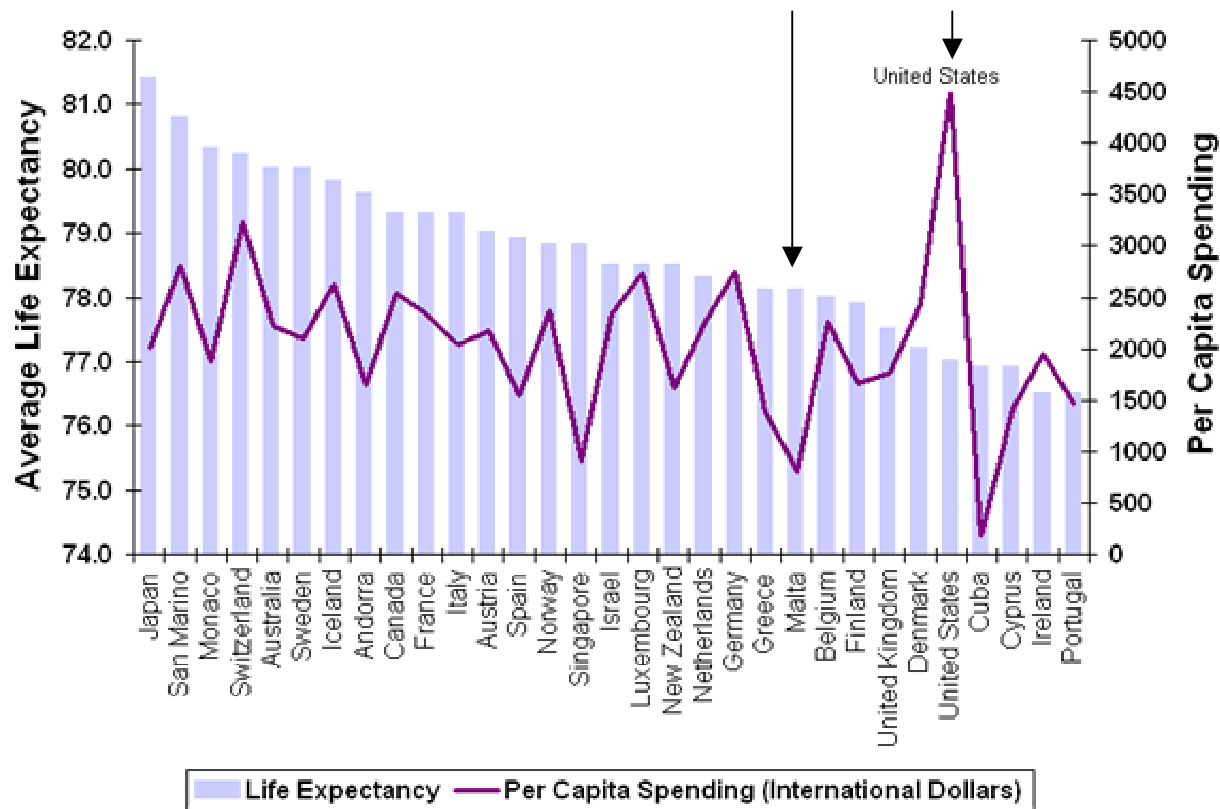
It is the administrators who will decide which patient gets what treatment⁽³⁾.

⁽³⁾Holistic Health: Australia Health Journal.

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The American Healthcare Association (2000)

The Cost of a Long Life



Ethical Egoism

“One should act so as to bring about the greatest number of good consequences to yourself.

What is good is what makes me happy or gets me what I want”

Doctors

Hippocratic oath
where the doctors
solemnly swears,
every decision is taken
based on the patient's good
state of being



Doctors (cont.)

- An aid, in confirming diagnosis.
- The doctor still has to examine the patient well.
- Patient will still undergo, blood tests or X-rays.
- It is the symptoms which will be entered in the system.
- Faster access to patient's records
- All in all saves time



Doctor's (Cont.)

However, in the study we asked questions like :

- What if the doctor, starts to relax, by time, thus examining the patient, not as thoroughly as before, and entering two symptoms not one, in the system wouldn't that lead to an incorrect diagnosis ?
- What if after entering the data, the prognosis of the patient would not look good and the doctor would give less care to this patient ?



Doctors (Cont.)

"While one patient may have data showing high cholesterol, chest pain, higher blood pressure within an arterial section, and previous heart attack history within the family, another patient may only show high cholesterol and chest pain. While both patients may require a catheterization, the limited data of the second patient may limit the ability of the diagnosis, and therefore, could lead to the misdiagnosis of the patient".

Doctors (Cont.)

- However studies confirmed that this system, in cases where doctor's and CDSS diagnosis varied, more tests were run.



Improved patient safety
Improved quality of care
Improved efficiency in healthcare

- <http://www.coiera.com/aimd.htm>

Hospital Administrator

Is responsible towards :

- The hospital directors
- The medical staff
- The patients



Hospital Administrator (Cont.)

- Implementing this system certainly favours the hospital Administrator
- It aids the doctor
- It gives a better service to the patients, more quality time
- Attracts more patients, and more money to the hospital directors.
- Marketing tool to have a competitive edge over hospitals having such a system.



Hospital Administrator (Cont.)

- This brought about discussions like, the cost of the system, maintenance, upgrades.
- Does this imply that this system would be implemented in a private hospital?
- Will the system be available to the rich patients only?



...Implications

- Using the ethical egoism theory, the system offers many advantages to both doctor and administrator.
- These two external stakeholders will certainly be in favour of the system.





UTILITARIANISM

Decisions should be made on the basis of achieving the greatest good or the greatest number without making an intrinsic value judgment about the decision itself.

The ethical theory proposed by Jeremy Bentham and James Mill that all action should be directed toward achieving the **greatest happiness for the greatest number of people.**

Utilitarianism is sometimes called a consequentialist theory in that the primary consideration is the consequence of the decision.



RESPONSIBILITIES

Question 1: *What are the main ethical dilemmas facing a doctor using such a system?*

Question 2: *What would different ethical theories tell us to do when faced with the possibility of commissioning such a system?*

Question 3: *Would you, as a hospital administrator, actually commission such a system if the technology was demonstrated to provide accurate statistical results?*

Biomedical Ethics

- **Autonomy**
- **Beneficence**
- **Non-maleficence**
- **Justice**

- *Determine liabilities when cases arise. Who would be morally and ethically responsible: the software organization, the owner (hospital management), the consultant professional, junior doctors, etc?'*



Principles of Biomedical Ethics

- **Autonomy**
- **Beneficence & non-maleficence**
- **Justice**

Autonomy

- based on the Principle of Respect for Persons, which holds that individual persons have right to make their own choices and develop their own life plan.
- principle of informed consent: Not to treat a patient without the informed consent of the patient or his or her lawful surrogate, except in narrowly defined exceptions.

Every effort must be made to discuss treatment preferences with patients.

Principles of Biomedical Ethics



- **Autonomy**

- **Beneficence & non-maleficence**

- **Justice**

- (i) Intention and will.
- (ii) Decision based on information and understanding
- (iii) Unhindered decisions

Users are able to decide for themselves their own course of action.

- Decision support systems do generally impose restrictions upon the autonomy of a human decision maker
- Cognitive medical diagnosis, must not be too excessive that they transcend into paternalism – thereby reducing the autonomy of the decision maker .
- Does the finite processing of the systems lead to restrictions on the free decision making abilities of the user as to what is important and what's not ?



- **Autonomy**
- **Beneficence & non-maleficence**
- **Justice**

Beneficence is the 'act of commission to do good' - promoting the interests and the well-being of the patient.

- an obligation do those acts that are likely to do more good than harm.

Non- Maleficence is the act of omission and the obligation not to inflict harm on the patient.

- obligation not to do those acts that likely to produce more harm than good

Viewed from the consequential utilitarian ethical framework, both strive in the context of medical diagnosis to ensure the good for the patient is maximized.



- **Autonomy**
- **Beneficence & non-maleficence**
- **Justice**

- Both principles rest on the fundamental importance of what is in the patient's interest.
- *CDSS would be primarily to assist decision makers with beneficence acts as the primary goal .*

butdecision supporting systems in medical diagnosis could at times lead to conflicting decisions which action to take.

In conflict between the two principles, the principle of non-Maleficence trumps the principle of Beneficence.



- **Autonomy**
- **Beneficence & non- Maleficence**
- **Justice**

Justice

- Looks at issues of equality of access, fairness, and allocation of health resources.

Who should be entitled to use of Clinical Decision Supporting Systems ?

Need is the basis /criteria for the individual's claim to any basic good.



- **Autonomy**
- **Beneficence & non-maleficence**
- **Justice**

- Medical need should be determined in terms of the following criteria: likely benefit to the patient, urgency of need, change in quality of life, duration of benefit.
- Non-medical criteria for limits should not be used: ability to pay, social worth, obstacles to treatment, patient contribution to illness, and use of past resources .
- From a utilitarian perspective, CDSS should maximize overall utility by increasing the efficiency of medical care.



Legal responsibilities and implications

- Are systems that are based on a paternalistic approach unethical ?
- Do expert system programs shift the responsibility of any decision from the user squarely onto the developer ?
- In litigations when error is not the result of an autonomous decision , could a paternalistic approach exonerate practitioners any wrong doings from the end?
- Could the outcome of such a system be used in a court of law to overcome and trump any medical decision ?
- Could clinical decision supporting systems serve as a tool to medical insurance agencies in cases of litigations ?



Administration issues of implementation

“Would you, as a hospital administrator, actually commission such a system if the technology was demonstrated to provide accurate statistical results?”

Costs :

- responsibility of reducing costs and maintaining a reliable service. If this system does prove to reduce costs and improve decision-making then a hospital administrator has a responsibility to implement it.
- Ensure proper management of recurrent expenditure cost
 - Maintenance costs
 - Training update expenses
 - System Audits
 - Expenditure control of financial resources



Administration issues of implementation

- **Training :**

- Can the patient's health ultimately be at risk and depend on the competence of the user using such decision support systems ?
- Should there be external audits to control their proper use ?
- Need for practitioners using system to be qualified and periodically reviewed .



- **Legal Implications**



- Could such systems be used to justify misdiagnosis implications and in cases of legal litigation ?
- Possible source of grounds for insurance contestation of treatment ?

- **Road to easier triage of resources**

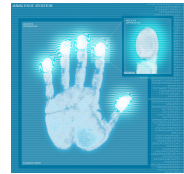
- Risk of discriminatory abuse in distribution of medical welfare



Administration issues of implementation

- **Confidentiality and security of the processed patient data.**

- All sources of patients have to be sent to external reviewers in audits.
- Possible violation of privacy.

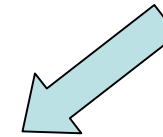


- **Patient's right to information**



- Patients challenging practitioner's decision.
- conflict between practitioner's calculated diagnosis and system's outcome , which would be binding ?
- Conversely, could computer data be used to trump hesitant patients or coerce them into agreeing with a health professionals decision ?

CONCLUSION



Ethical Egoism

- marketing
- increased revenue

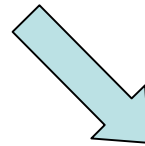
Utilitarian

- cost expenditure
- budgetary allocation
- maintenance issues
- training/ competence
- litigation
- information security
- patient contestation



Rights theory

- for best treatment
- for free choice



Rights theory

- for best medical aid

Ethical Egoism

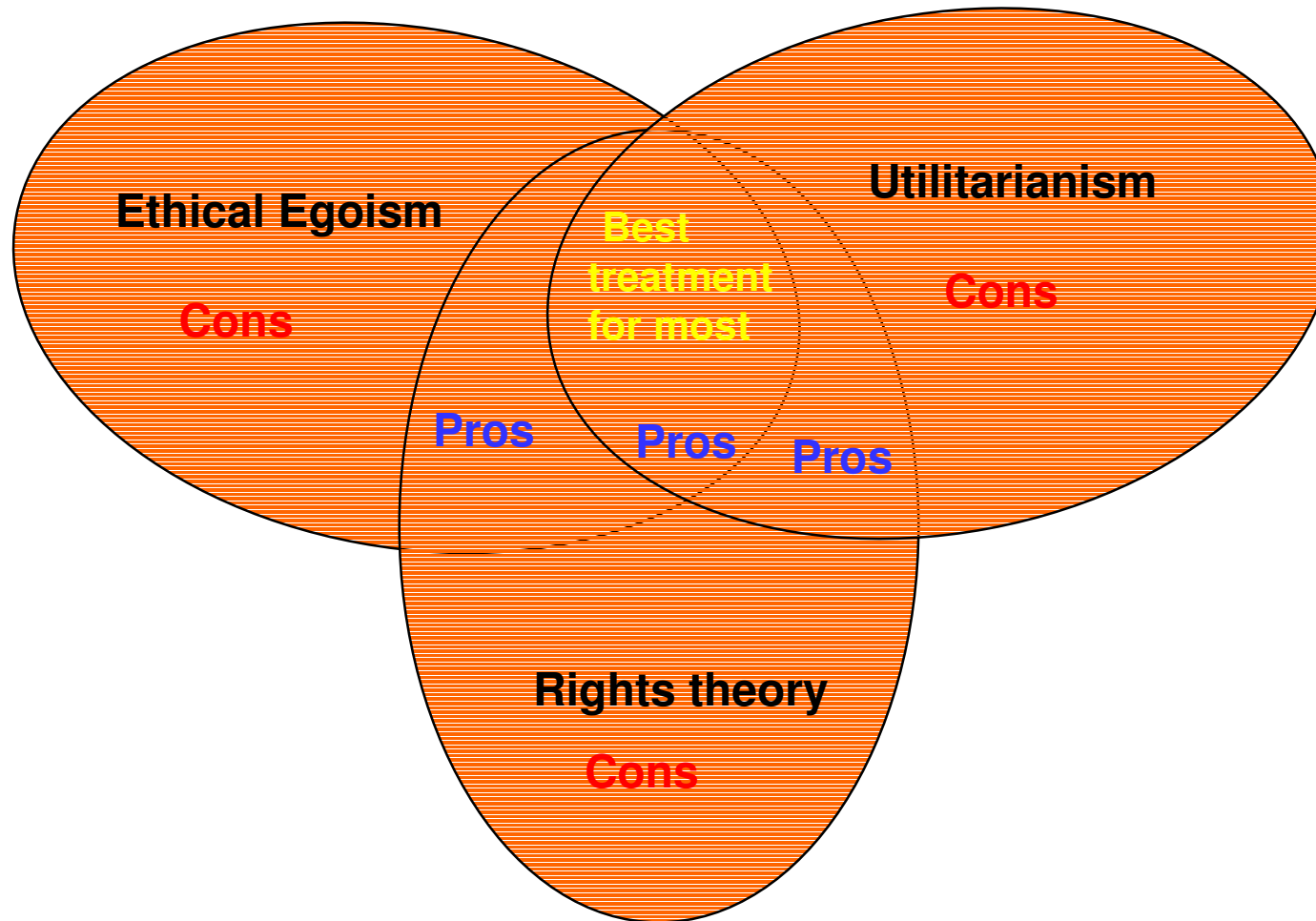
- lax attitude
- reliance

Utilitarian

- Paternalistic bias
- Beneficence conflict
- Candidate choice

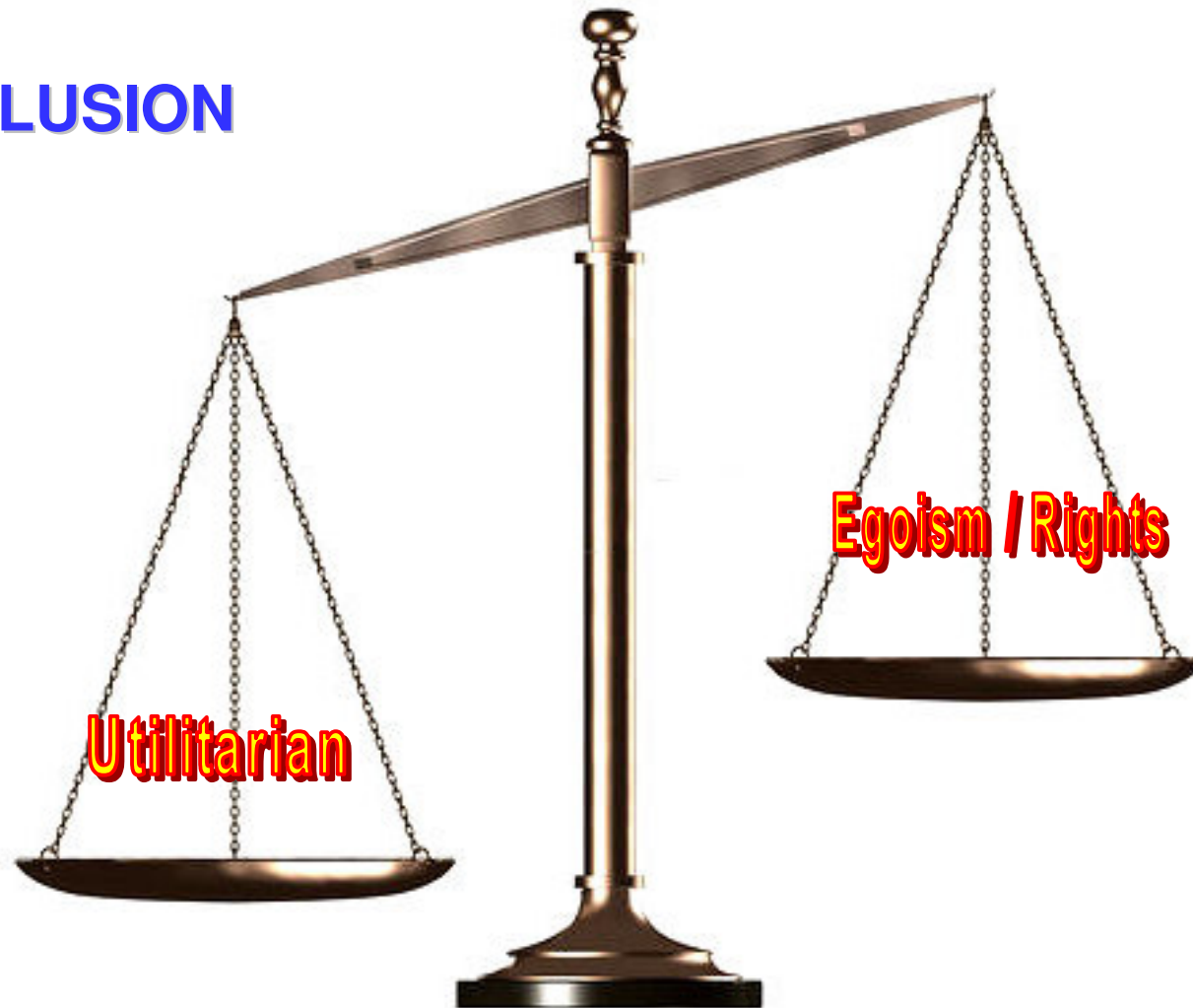


CONCLUSION



Best treatment for most = Utilitarian approach

CONCLUSION



Utilitarian approach would tend to favour implementation of medical diagnosis decision supporting systems in the interest of the well being of the maximum amount of patients.

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