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QUALITY CONTROL: THE CURE FOR MEDICAL MISTAKES?

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[This article was first presented as a poster at the 11th Meeting of the International Society for Clinical Biostatistics in Nimes, France, 18-21 September 1990.]

The management objectives put forward by Dr William Edwards Deming for achievement of high quality products by elimination of faults of manufacture have been enthusiastically followed by Japanese Industry. They are believed to be the principal factor in the world wide success of their industry.

Medical care and medical treatments are normally carried out by well trained and dedicated staff with a commitment to providing the best possible treatment for their patients. Mistakes and omissions of treatment can, however occur.

This article is concerned to describe and discuss the necessary practices that should be implemented in the provision of health care in order to help reduce the occurrence of medical mistakes. Improvements in information services provided by computing systems could aid in both correct diagnosis, suitable schedules of treatment, and revision and review of treatments. Mistakes by the medical profession can lead to considerable expense for the whole community in terms of suffering by the patient, cost of further treatment to alleviate or solve the induced medical condition and the suffering and hardship of relatives.

One of the principle themes of Deming's philosophy is that if mistakes are minimized then cost reduction follows. How can the medical profession minimize the occurrence of mistakes within it?

1.

BAD NEWS

The trouble with quality control is that it is always BAD NEWS. If something has gone wrong everybody knows it is best to say nothing and have as little to do with it as possible. Unfortunately, even in the best run organization things can go wrong. Accidents can, and do, happen. Then the search is on for:

WHO IS TO BLAME.

This is as true of medical treatments that cause illness (called Iatrogenic Disease) as it is of any other operational failure.

Then, of course, the best defence for everyone in the organization is to say nothing and hope the problem will fade away.

IATROGENIC DISEASE

There is an extensive literature on iatrogenic disease. I shall not attempt a survey. Any medical treatment can go wrong.

Insofar as the subject of Statistics is concerned with errors, we are also concerned about errors of organization and management. Statisticians need to be concerned with the minimization of such errors. The evolution of the system is the evolution of a population.

If one examines the contents of books on management science and on quantitative methods for use within commercial and industrial organizations there is much about linear programming, the Simplex method, games theory, etc. There is nothing or very little about minimization of errors of communication within organizational structures which lead to the wrong things being done.

What processes take place within organizations that lead to such errors?

Consider: **THE HIERARCHICAL STRUCTURE**

The method of management that often operates is:

THE BOSS

The boss says DO THIS.

He expects it to be done. He's the boss.

He doesn't want to be bothered with questions about it.

THE WORKER

The boss told me to do such and such.

It is not my function to think about it.

If I question it I'll be looked on as a trouble maker.

Or, if I tell the boss the right thing to do maybe he'll do it.

BUT:

If the worker is right the boss will take the credit.

If the worker is wrong the worker takes the blame.

So: the operative does as he's told.

What happens?

ORGANIZED CHAOS REIGNS

What is wrong?

1. **THE WORKER IS IN A NO-WIN SITUATION**

2. **THE BOSS IS IN A LOSING-OUT SITUATION**

So:

THE BEST ACHIEVABLE IS NOT BEING ACHIEVED

In the medical situation:

THE STAFF DOING THE BEST FOR THE PATIENTS END UP:

1. **DOING ALL THE WORK.**

2. **RECEIVING THE LEAST REWARD**

3. **DEMORALIZED**

4. **THEY START TO THINK:**

"IT'S NOT MY JOB TO KEEP ON PUTTING RIGHT SO AND SO'S MISTAKES"

So,

THE SYSTEM BECOMES MORE DEGRADED

Even in the best run hospitals things can go wrong.

It is possible for a patient to be receiving the best possible treatment from a dedicated team with first class facilities and still things can go wrong for the patient.

It is very upsetting emotionally for all the staff concerned.
As well as possibly disastrous for the patient.
Living on earth is hazardous.

2. POSSIBLE SOLUTIONS

2.1. MEDICAL AUDIT

Highly laudable. Essential.
Measure how often treatments go wrong.
So we can learn about the size of the problem.
But, as Deming said:

'MEASURES OF PRODUCTIVITY
DO NOT LEAD TO IMPROVEMENT OF PRODUCTIVITY:
... A DELUGE OF FIGURES...DO NOT POINT THE WAY TO IMPROVEMENT'
and:
'LOW QUALITY MEANS HIGH COST:
DEFECTS ARE NOT FREE.
SOMEBODY MAKES THEM AND GETS PAID FOR MAKING THEM.'

Knowing the size of the problem
WILL NOT SOLVE IT

So,
What should be done?

2.2 POSSIBLE SOLUTION: THROW MONEY AT THE PROBLEM!

Having measured the problem and found the hospitals with the best records and those with the worst records, should we then:

Possible Solution 1: Give more money to the hospitals with the worst records to bring them up to the standard of the hospitals with the best records?

Or

Possible Solution 2: Give more money to the hospitals with the best records, thus rewarding the 'good'?

NEITHER SOLUTION WILL WORK !

If we do 1 we are rewarding bad workmanship.

If we do 2 we are encouraging the best hospitals to off-load the 'difficult to manage' patients onto the worst hospitals.

Or, perhaps, we are putting into the system a source of reward for cheating wherever possible.

So,

FINANCIAL REWARDS BASED ON THE RESULT OF THE AUDIT
APPEAR TO HAVE NO MERIT

What matters is:

WHY ARE THE HOSPITALS DIFFERENT?

Some hospitals are likely to be good hospitals for identifiable reasons.

- (a) Catchment area: this may be predominantly middle class, or it may be predominantly working class.
- (b) The better hospitals may be Teaching Hospitals associated with Universities, or may be central to an affluent region.

POSSIBLE SOLUTION 3: INFORMATION TECHNOLOGY

Patient information, patient records, computerized diagnosis and feed-back to correct weaknesses in the system of medical care will all lead to a reduction in the incidence of mistakes.

Comparisons between hospitals need to be done using standardized (for age, sex and social class at least) rates of mistakes.

POSSIBLE SOLUTION 4: SELF DIAGNOSIS BY THE PATIENT

If the patient could diagnose and treat himself he would only have himself to blame. What the patient needs is high quality information and advice.

So, place in the local library a computer, where in total privacy he anonymously reveals to the computer the most personal details of his unfortunate medical condition.

The computer could give him a profile of the possibilities of his illness and the various alternative treatments.

The patient should then know:

WHAT IS LIKELY TO BE WRONG WITH HIM

and

WHAT THE TREATMENT IS

and

WHAT THE LIKELY OUTCOME IS

but,

HE IS NOT CURED

In many cases he may be able to get a prescription, which when taken, will solve his problem.

BUT, as with all DO IT YOURSELF jobs, he would be doing it for the first time.

He would be more likely to GET IT WRONG AND CAUSE SELF INDUCED DISEASE than if his medical practitioner had treated him.

PUBLIC INFORMATION

Because medical treatments can go wrong the medical profession does not like to advertise the fact. They would like the public and recipients of medical care to believe that risks are minimal. They do not want to 'alarm' the public.

Most of the public are too busy trying to get along with a difficult life to be concerned with medical treatments going wrong.

What matters to the public is that what can be done to improve the state of medical care is being done.

What the public do not like is indifference to the problem or a refusal to acknowledge its existence.

2.3

A BETTER METHOD FOR SOLUTION

The method is

REASON

Many of us are statisticians and practitioners of statistics. But statistics as a method on its own is sterile.

Statistics comes into its own in APPLICATIONS.

Statistics is considered dull by the mass of mankind because:

We measure by counting the numbers of events we are concerned with.

We publish the figures.

Then we:

DO NOTHING ABOUT THEM !

Statistics are numbers concerned with:

AFFAIRS OF STATE.

To be true statisticians we should specify:

WHAT ACTIONS SHOULD BE TAKEN IN VIEW OF THE FIGURES

or at least:

THE CONSEQUENCES OF TAKING ALTERNATIVE COURSES OF ACTION

otherwise:

WE MAY AS WELL NOT BOTHER TO PRODUCE STATISTICS

THE GOOD NEWS

The medical profession is learning from its mistakes.

It may be a slow process.

But undoubtedly medical treatments have improved over time.

All members of the medical profession try to get things right.

They may fail.

They are frightened to admit failure.

Why?

It strikes at the root of EGO.

There is a psychological problem linked with medical mistakes.

The doctor has done his best (or worst) for the patient, and the patient's condition is worsened.

The doctor would **RATHER NOT KNOW.**

He would rather the **PATIENT DID NOT KNOW.**

The doctor's ego feeds on the knowledge that he is helping the patient.

THE DOCTOR'S DILEMMA

Each prescription has to be 'tailor made' for each patient.

In manufacture of a product such as a car or car component, even something as simple as a screw, which is produced in large quantities, the manufacturer has many opportunities to perfect the way in which the component is produced.

Wrong ways of setting up the machinery can be corrected before the main stream of components is produced.

The same applies to manufacture of a pharmaceutical tablet or capsule.

When dealing with a patient, a mistake made, is made, and cannot be undone.

'The moving hand has writ, and having writ moves on'.

The imprint of the medical treatment is there for ever.

If the patient is better, he is better.

If he is worse, he is worse.

The medical practitioner

CANNOT GO BACK

TO WHERE THE PATIENT WAS BEFORE

AND GET IT RIGHT NEXT TIME

for the same patient.

MEDICAL TREATMENT

Because the individual being treated is unique the patient picture presented to the doctor is always different.

The number of factors that can cause the treatment to go wrong are multitudinous.

As in fitting a multiple regression model, if one relevant (but not obviously relevant) factor is left out of the model, then things can go wrong for the patient.

Failure of the patient (perhaps forgetting, or not thinking it may be important) to mention some fact, can lead to administration of an inappropriate treatment.

PERCEIVED RISK

The perceived risk of medical mistakes is greatest in the industrialized nations.

For many in the developing world there are many who are glad to receive any competent medical care.

In the developed world our expectations are high.

We expect to get good medical treatment, and usually do.

If treatment goes wrong we are more able to get the medical profession to get it right in the future.

Prediction: As medical treatment improves, and affluence increases world wide, there is going to be increasing public pressure for the medical profession to

eliminate errors of treatment.

THE CURE FOR MEDICAL MISTAKES:

Of course it has to be:

DEDICATED TEAM WORK

TRAINING OF STAFF

IMPROVING THE SYSTEM BIT BY BIT ('KAISEN')

AVAILABILITY OF PATIENT RECORDS TO THE PATIENT

AVAILABILITY TO THE PUBLIC OF COMPUTERIZED MEDICAL INFORMATION SYSTEMS (Because they are the only ones who have the time to dedicate to their own medical condition).

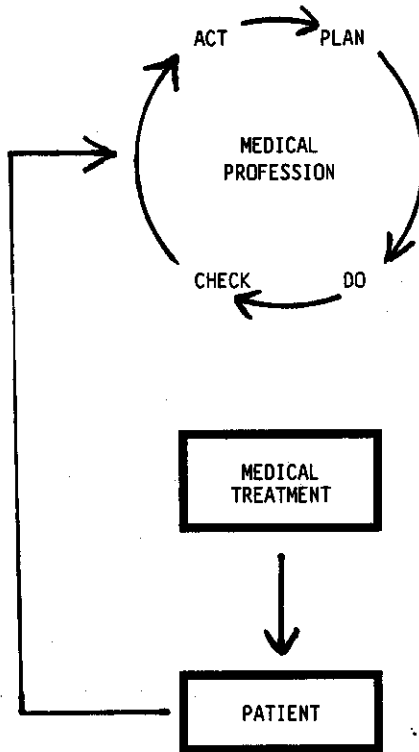
The availability of 'paramedics' to aid patients in self diagnosis.

THE REASON:

Because:

this is the spur
for the medical profession
to seek continually to improve methods of treatment.

In other words:
APPLY THE DEMING CYCLE FOR CONTINUOUS IMPROVEMENT:



IT IS IMPORTANT THAT THE DEMING WHEEL TURNS IN THE DIRECTION
TO HELP THE PATIENT

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