

# Dr. Quichote's Fight against the Guideline-Windmills

Spectacular novel principles in medicine can definitely not originate from physicians, because they have become addicted to a dogmatized guideline-dictated medicine, based on firm belief in a study concept for "scientific studies." It needs recognition that the medical methodology in several areas have not developed beyond external technical influence. The reason for this widely unrecognized calamity is to be found here:

1. A new Method depends often on different routines than previously exerted.
2. The physician's 'credo' permits only the employment of predominant dogmas. With the old routine, a new method is used falsely.
3. When the new principle is clinically tested, controlled studies are employed. Using the established routine, new methods are tested. Who can be surprised if the old method under these circumstances demonstrates superiority?

I must admit that it is not always that simple. However, having been involved in the development of several convincing prehospital methods which have not persuaded others, it seems to me that prehospital emergency medicine has stalled in old-fashioned methods, basically unchanged from better educated staff, faster vehicles and other technical developments. This impression shall be illustrated with some examples.

## I – ACD

ACD (Alternative-Compression-Decompression) is the fine name for a new resuscitation principle; plumber's cup comes nearer to its origin, and also the view bears unmistakably resemblance to this device. It fulfils in every aspect the above description, including the origin of the principle through bloody laymen – in short: a man suffered cardiac arrest on the toilet at his home in San Francisco. He obliterated the way out, but the plumber's cup was just besides him, and with that he was given heart massage by his wife – so effective that he had started to breathe as the paramedics arrived. At first, the story did not cause any notification. Half a year later, the man again had cardiac arrest at home, this time alone with his son, who immediately started to resuscitate, but with no satisfactory effect. He then remembered what his mother told him about the plumber's cup, fetched it and indeed, the colours of the father improved – he survived also this time. It deserves attention that ventilation both times was not attempted. In the hospital, the young man suggested that his preferred device should be kept ready for each heart patient. "Young man, first you should learn how to do it according to the guidelines," they told him, could, however, not argue with the double success. In this respect, physicians are easier to deal with: mutually agreed guidelines replace thinking.

At first, however, curiosity prevailed in San Francisco. It could be shown that some problems were ameliorated that related to conventional resuscitation and the increased intra-thoracic pressure: Increased venous backflow, lowered intracranial pressure while it simultaneously increased the cardiac output and accordingly, cerebral and renal blood flow. Moreover, the procedure caused considerable ventilation.

Our experience was positive and has been published [1,2]. We were, however, able to establish that optimal results demanded a lower rate of both compression (40-60 instead of 100/min) and ventilation (3-4 instead of 12-15/min) but the ventilation bag was left on the tube (the patient was always intubated), in order to give oxygen-enriched air for the small compression-related ventilation.

In spite of its favourable features, ACD was rapidly killed by FDA. It was demanded that it should convince in clinical studies when used according to the official guidelines for conventional resuscitation. It did not, under wrongful circumstances.

## II – MAST

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1 Schou J, Kübler J, Scherb M, Deklerk J. Active compression-decompression in CPR. Acta Anaesthesiol Scand 1993;37(Suppl. 100):S228.

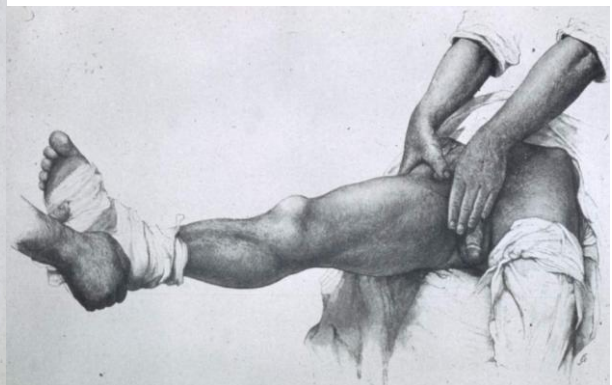
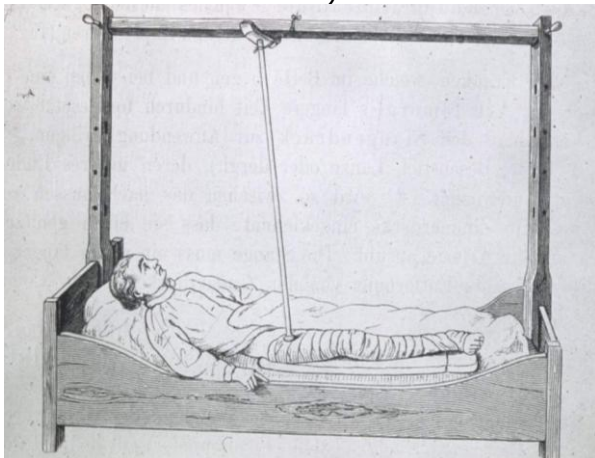
2 Schou J, Kübler J, Scherb M, Deklerk J. Active Compression-Decompression in der cardiopulmonalen Reanimation. Anästhesist 1993;42(Suppl):122

As an emergency physician, I witnessed several fatal accidents. Fortunately, I could also justify my presence through some spectacular successes [3]. Most frustrating, however, was an accident where I talked to a patient (before performing anaesthesia) who then hours later died in the hospital – due to abdominal bleeding.

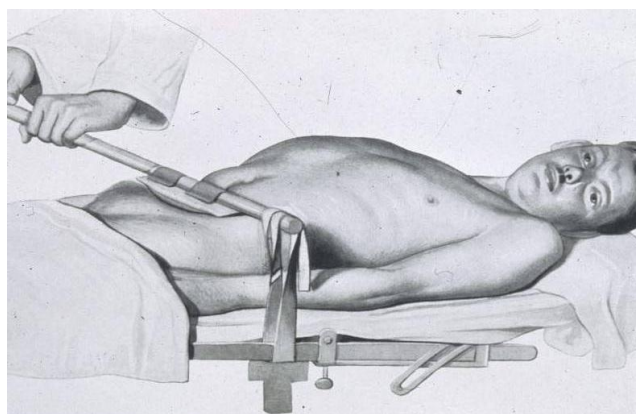
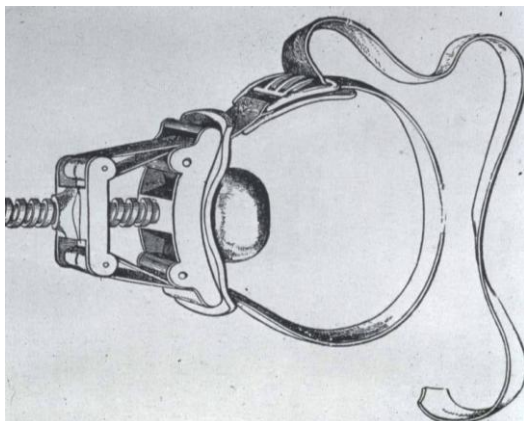
In a daring and an unusual cooperation with the potential enemy of physicians fearful of prosecution, the general attorney, we carried out a study of the 430 fatalities through traffic accidents in our County during 16 years [4]. The majority of cases died on the site of accident whereas 43% died in hospital.

For a more detailed analysis, I studied the 60 cases of my own responsibility. 27 patients (45%) died in hospital, and of these 13 were responsive some time after the accident, excluding the most extensive cranial trauma. Seven of these 13 cases and four of the other 14 died because of intra-abdominal bleeding, thus 11 of the 27 patients (41%). Pleural drainage was carried out by four, and unrecognized pneumothorax or spinal injury did not occur by the autopsy, which was carried out in all patients after accidental death. Medical anti-shock trousers [MAST] were at that time not available and the study, therefore, shoved the problem, not the cure.

Due to the generous indications for performing endotracheal intubation, intra-abdominal bleeding has become relatively more frequent as a cause of death following trauma. If there was a possibility for influence upon this condition, it might be possible to save roughly half of the patients, who with present standard died after an accident but had been responsive at some time after it (the small figures of this study does not invite for statistical evaluation).

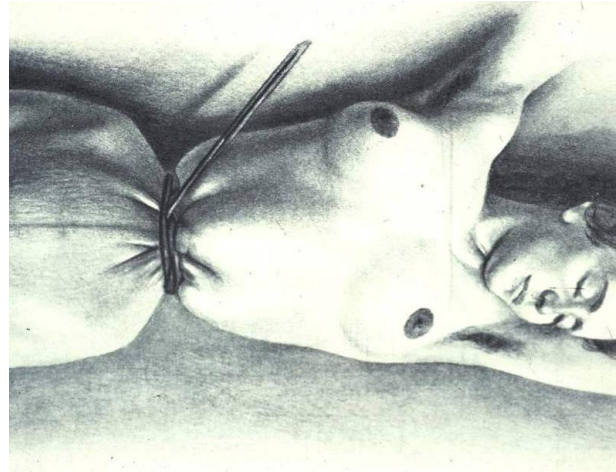
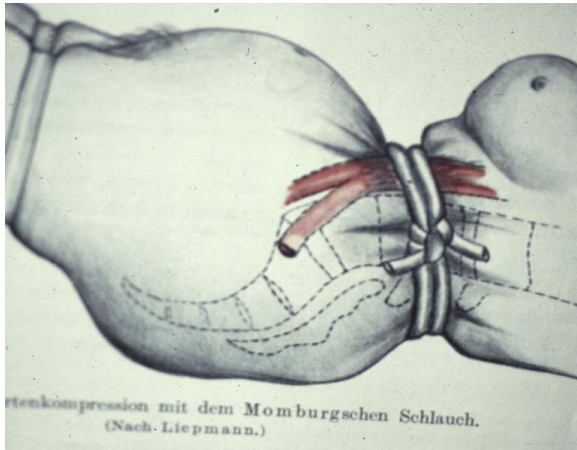


*That compression can stop bleeding is not a new discovery.*

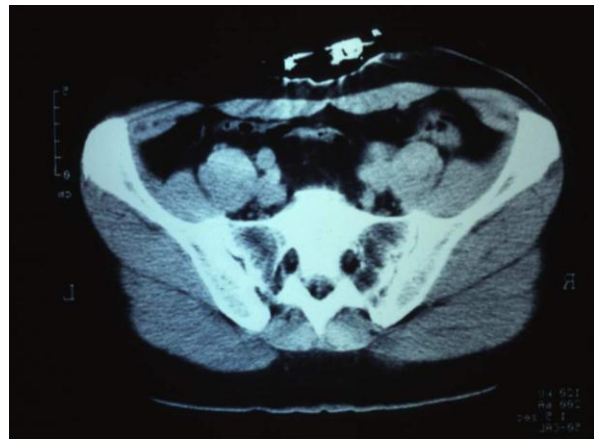


3 <http://www.schou.de/phem/Best%20Intentions.pdf>

4 Schou J, Ginz HF, Herion H-P, Huck D, Blum R, Fehlmann R, Ummenhofer W. Abdominal haemorrhage – a preventable cause of death after field stabilization? Resuscitation 2000;43:185-93.



*Momburg's procedure for postpartum bleeding*



*Non-pneumatic MAST – Self-portrait: made slim with such (I forgot to take off the belt)*

Our task was now to find a relevant therapy for suspected bleeding (I shall not comment here on the diagnostic problems). This seemed already available, although just discredited in an American study [5]. Since at least the 18<sup>th</sup> Century, probably much earlier, it is known that bleeding can be stopped with appropriate compression. If, however, all kinds of shock are included in the indications for MAST, as the name may mislead, a study results with an impressive size is collected, but few where MAST could have a positive influence on survival and perhaps even many where the impact could be negative.

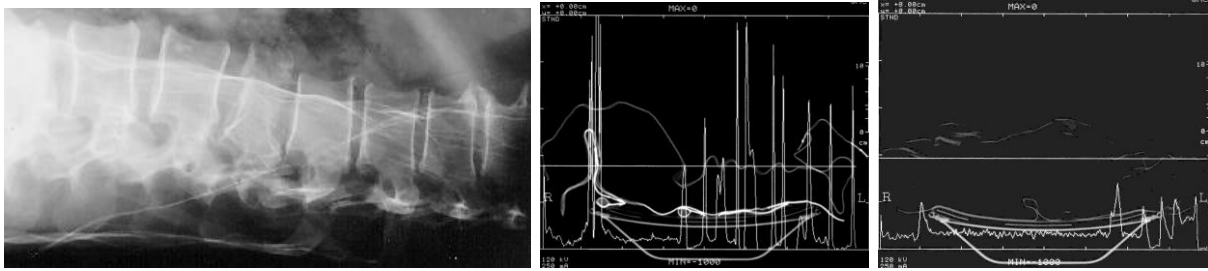
We bought a non-pneumatic MAST (as shown above) with the intention to use it for severe blunt trauma prehospitally. Surprisingly, the device proved to be life-saving in two cases of ruptured abdominal aneurysm in pre-final shock before transfer to a university hospital for successful operation [6]. We concluded (unscientifically) that this would mean that bleeding-sources with lesser pressure had good chances of success. I was, due to own disease. Not given the chance to demonstrate that in a further study.

### **III – Vacuum Mattress**

In Germany, I learned to appreciate the vacuum mattresses [**VacM**]. The injured patient is placed on a very soft mattress, whereupon the air is evacuated and the mattress, now hard (comparable to vacuum—packed coffee) supports the patient, maintaining his or her individual form. The resultant hard basin is ideal for Stabilising fractures of the spine, pelvis and femur.

5 KL, Bickell W, Pepe PE, Burch J, Feliciano D. Prospective MAST-study in 911 patients.. J Trauma 1989 29:1104-12

6 Schou J, Hauser E, Schreiner W. Use of non-pneumatic antishock garments for ruptured abdominal aortic aneurysm. Eur J Emerg Med 1997;4:169-71.



*Vacuum mattresses yields artefacts of different intensities in x-ray and computed tomography*

Already accustomed to this advance in prehospital care, I was suddenly confronted with a torture device, happily used with the best intentions in USA and UK. "Poor patients there," I thought and had no thought of giving their problem any further attention – until I suddenly realized that this mischief was also proliferating here.

If a normal person lies down on a hard bathroom floor (will a normal person ever do that?), he has approximately the feeling of a 'stabilized' trauma-victim on the spine-board – except that the patient already might have back-pain before. Within minutes, not hours, any person tries to move. Also the patient tries to move, but therefore he is bound to the device, what larger movements perhaps hinder but other stimulates. You may feel compelled to ask, what the point is, but better not do it in public, because the spine-board enjoys the protection of a guideline, and as a dogma it is not questioned. Probably, the well-meaning inventor thought that his device would stabilize the spine and only forgot to investigate, if this is really the case. I believe it's real place is in the museum, in the department for modern torture devices, just beside water-boarding.

Most VacM produces artefacts in X-rays. This is unimportant for computed tomography, but it may also be advisably to chose one which causes less shadows [7].

#### **IV – Midazolam**

With midazolam, we received in 1984 a drug with the well-known benzodiazepine-properties, but fast working and short-acting. Although such pharmacodynamic characteristics should be ideal for emergency medicine, its leading physicians lived in the past. I presented the drug on this scene in 1986 [8], among others with the possible intramuscular access as fast alternative when an IV-line would be difficult (e.g. by persisting convulsions and in small children). It proved, however, impossible to publish the study, in spite of several attempts. In the beginning, a reviewer was outraged by the suggestion of an IM application, since the guidelines demanded a rectal route for the old diazepam. Later attempts were obliterated by the then rapid spread of the drug among more open-minded. The article was rejected since it was not new anymore.

#### **V – Nalbuphin**

This drug came to us as a coincidence and certainly not pharmacological considerations, since it suddenly was the sole opioid, possible to care along in the emergency bag without bureaucratic complications (other emergency physicians swallowed the camel). Then it turned out that there was a useful synergistical interaction with Midazolam and even more so with etomidate. By coincidence also we discovered its properties as an antagonist. In drug addicts, an IM-dose (there we stopped the IV-line) caused a peaceful recovery, whereas guideline-protected naloxone, with an acute arousal, often causes violence, as described in Best Intentions [3], Case-Report 14, and [9]. The difference is so outstanding that I cannot imagine that most colleagues even tried it and they are

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7 Schou J, Kiermayer H, Ummenhofer W, Herion H-P. In Search of the Most Suitable Technique for Truncal Spinal Immobilization with Associated Radiography. Eur J Emerg Med 2001;8:89-92.

8 Schou J. Midazolam zur Sedierung und Krampfbehandlung in der Notfallmedizin. Europäischer Anästhesiekongress, Wien 1986, Abstract vol. III, Nr. 862.

9 <http://www.schou.de/anaesth/nubain.html>

therefore not using it, but instead preserving the tradition. Towards that, developmental aid is often fruitless.

## **VI - Flumazenil**

For the first benzodiazepine-antagonist, flumazenil, I had the special pleasure for indications relating to emergency medicine [10]. It was no easy position. The preceding two days were filled up with lectures on pharmacology and the anaesthesia on varying indications with midazolam and the sudden awakening with flumazenil. Now I again broke the rules with the suggestion to wake up most (not all) of the unconscious patients, rather than intubate and ventilate them. Unforgettable was the discussion: "Dr. Schou, if you cannot intubate, you should not be an emergency physician!" Later on, flumazenil was almost only used for intoxication-patients.

## **VII – Etomidat and Selective Amelioration of Reflexes**

The impact of etomidate upon the airway reflexes was an observation originally from prehospital emergency medicine, a (still) neglected topic later studied [11]. That and the mentioned interaction between the two or three drugs used, was the basis of the three techniques used, described separately elsewhere on this webpage [12]. In one particular mission (Case-Report 38 in [3]), it was used in six cases, leaving the recovery or the maintenance to others for the first five patients that evening.

## **IIX – Nasopharyngeal Intubation**

I met particular rejection of my preference for nasotracheal Intubation. This is currently out of fashion, accepting therefore pending. Instead we now see '*artificial coma*' (long-term anaesthesia over several days), a concept necessitated by the constant upper airway reflex provocation in orotracheally intubated patients. What this causes for side-effects is yet to be discovered [13]. In several missions was shown that a nasotracheally intubated patient can breathe alone and demands only light sedation when hands for ventilation are spare.

## **IX – Emergency Therapy Index (ETI)**

Since my first year in prehospital care, I was disturbed that the 'succes' of a mission was measured by the severity of the patient's condition, regardless whether or not this could be influenced by our measures. In consequence, I created the ETI. The real value of this tool was that it stimulated a more aggressive therapeutic attitude, including the development of new techniques (as described above), but also the adaptation of in-hospital principles, e.g. detoxification measures (which by intoxication are the more effective, the earlier they are employed).

In contrast to the prehospital improvements (often with positive consequences also for further care in the hospital), the current trend is to implement the American ALS and ATLS in prehospital care. This dogmatic approach reflects the absence of physicians in prehospital emergency medicine.

**In conclusion**, the prehospital arena turned out to be a fruitful basis for the development of new techniques. In the end, however, the windmills won, as they did over Don Quichote. I still have the dream, that what can be done in the hospital as acute measures, can also largely be carried out prehospitally [14] – with a few exceptions. In contrast, modern prehospital care has lost its visions.

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10 Schou J. Anexate in der Notfallmedizin, in: Anexate (Flumazenil). Der erste spezifische Benzodiazepin-Antagonist (W. Tolksdorf, J. Prager, eds.) <Editiones Roche> 1989, P. 103-8

11 [http://www.etomidate.schou.de/html/anaesthetics\\_and\\_airway\\_reflex.html](http://www.etomidate.schou.de/html/anaesthetics_and_airway_reflex.html)

12 [http://www.etomidate.schou.de/html/emergency\\_medicine.html](http://www.etomidate.schou.de/html/emergency_medicine.html)

13 <http://www.schou.de/anaesth/nasal.html>

14 Schou J. Maximum vs. optimum in prehospital emergency care — a call for compromise (editorial). JEUR 1995;8:125-6.