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Statistical dishonesty is a danger for public welfare

We need less, but better, research, done for the right reasons. Douglas Altman of the UK's Imperial Cancer Research Fund considers that too much poor medical research is published in medical journals. Methodological weaknesses, use of wrong techniques, use of the right techniques but for the wrong purposes, misinterpretation of results, selective reporting of results, selective literature citation and unjustified conclusions are common phenomena, misleading public opinion. Statistical dishonesty brings with it risks for public welfare.

Pressure to publish, whether to promote one's personal career or the finances of an institute, is one of the causes of the current increase in scientific fraud. The length of one's publication list is, all the same, a dubious indicator of an ability to do good research. Another problem is that doctors have too little knowledge of statistics or even of the basic principles underlying sound methods of research. It seems to be widely considered acceptable for medical researchers to be ignorant of statistics.

Altman DG. The scandal of poor medical research. *Br Med J* 1994;308:283–284.

Identifying in-hospital complications using discharge abstract data

The Complications Screening Program (CSP) is a method using hospital discharge abstract data to identify 27 potentially preventable in-hospital compli-

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cations, such as post-operative pneumonia, haemorrhage, reactions to medication and wound infections. Discharge abstract data used are age, sex, ICD-9CM codes for diagnoses and procedures, and the number of days elapsing between admission and the carrying out of certain procedures.

The CSP was applied to data on 1.95 million adults discharged from Californian hospitals in 1988. In addition, data were collated on the total hospital population and figures obtained for major surgery, minor surgery, invasive cardiology, endoscopy and internal medicine. Using these methods, an incidence of complications of 3.1% was found for the total hospital population, but the rate was as high as 11% for patients with major surgery and 10.4% for patients undergoing invasive cardiological procedures. The mean age of patients who experienced complications during hospitalization was 4.6 years higher than that of patients without complications. The former stayed in hospital twice as long, the in-hospital death rate was double and the cost involved three times higher than in the group without complications. Thirteen chronic medical conditions (such as diabetes mellitus, AIDS, cancer, etc.) were identified as being associated with a higher risk of complications. Combining the data made it possible to compile profiles of the patients at risk.

CSP can be used for identifying complications from discharge data. Probable patients at risk can also be identified. The CSP nevertheless has methodological limitations and needs to be further evaluated before it is used for purposes other than research.

Iezzoni LI, Daley J, Heeren T et al. Identifying complications of care using administrative data. *Med Care* 1994;32:700–715.

Adverse drug reactions: anything but uncommon among the elderly

In a three-month survey of 105 elderly patients aged 65 years and older, admitted to two general wards at the Sint Radboud University Hospital (Nijmegen, The Netherlands) a slight increase in drug use per patient was found, rising from 4.9 prescriptions on admission to 5.3 prescriptions at discharge. The median number of diagnoses per patient was 6 (1–16). The most common diagnoses on admission were diabetes mellitus, bronchopneumonia and cardiac decompensation. In total 120 adverse drug reactions (ADRs) were registered, 57 prior to admission and 63 during the stay in hospital. Using Naranjo's algorithm it was found that 37.1% of the admitted patients experienced definite or probable ADRs and that 14.7% of the admissions themselves were definitely or probably drug-induced. Diuretics were the group of drugs

most commonly involved in drug-related admissions, while antimicrobial agents were mainly responsible for ADRs during stay in hospital. A strong correlation was found between ADRs and the duration of stay. No correlation was found between ADRs and the number of drugs in use at admission or with the number of diagnoses in the individual patient. Further studies are necessary to focus on elderly patient groups at risk in relation to risk groups of drugs.

van Kraaij DJW, Haagsma CJ, Go IH et al. Drug use and adverse drug reactions in 105 elderly patients admitted to a general medical ward. *Neth J Med* 1994;44:166–173.

Too many older Americans are unnecessarily exposed to potentially hazardous prescribing

One-third of all medications are prescribed to people aged 65 years or older. But do they also need the prescribed drugs? Polypharmacy is a well-known problem in the elderly.

With data from the US National Medical Expenditure Survey (1987 NMES) inappropriate medication prescribing to the elderly was investigated. The NMES compiled data on 6171 people aged 65 years or older. A consensus panel of 13 experts in geriatrics and pharmacology defined 20 drugs that should be entirely avoided in older patients, regardless of dose, duration of therapy or indication. The list of contraindicated drugs included long-acting benzodiazepines and hypoglycemics, short-duration barbiturates, antidepressants with strong anticholinergic properties, less effective and less safe opioid analgesics, ineffective drugs for dementia treatment and selected NSAIDs, muscle relaxants, gastrointestinal antispasmodics and antiemetics.

In the NMES sample 82% of the elderly used medications. Nearly 29% of them (23.5% of all the elderly) received during 1987 at least one of the drugs listed as inappropriate for elderly subjects. A higher level of use of prescribed drugs as a whole seemed to be associated with a higher risk of inappropriate drug use. Women, people who rated their health status as poor, and people living in the southern areas were more at risk. Although the data for this study originated from a 1987 survey, a current literature survey found the same percentage of inappropriate drug use in nursing homes. The outcome may even underestimate the risks involved, since excessive drug dosage or duration, interactions, and the use of useful drugs in inappropriate clinical situations were not considered.

Willcox SM, Himmelstein DU, Woolhandler S. Inappropriate drug prescribing for the community-dwelling elderly. *J Am Med Assoc* 1994;272:292–296.

Gurwitz JH. Suboptimal medication use in the elderly. *J Am Med Assoc* 1994;272:316–317.

Pharmacists can change the prescribing behaviour of GPs in old people's homes

In The Netherlands 7.8% of the elderly live in retirement homes. Inappropriate prescribing of medications to older people is a widely acknowledged problem. Can inappropriate prescribing in retirement homes be influenced by feedback from a pharmacist? In such a home in Groningen the average level of use of drugs by the 199 inhabitants was 6.5 drugs (range 0–19) per inhabitant. In all, 43 general practitioners (GPs) were responsible for issuing the prescriptions.

In a six-week investigation GPs (and their patients) were randomly divided into three groups having similar patient and doctor characteristics. Group A formed the control group; physicians in this group were aware of the study but were requested to send their prescriptions as before. Group B received from the pharmacist a list with the medications used by their patients. Group C received from the pharmacist a list with the actual medication of their patients as well as documented recommendations by the pharmacist.

During the study, as might have been expected, some additional drugs were prescribed which had not been given before, while others ceased to be given, but the figures differed between the groups according to the degree of intervention by the pharmacist. In all three groups the addition of drugs led to an increase in the prescribing level by 5%, but the number of deleted drugs was higher in group C than in the other two groups (7% vs. 3%). The information fed back by the pharmacist proved for 44% of the GPs to be new for them; it resulted 9 times in withdrawal of the medication and 4 times in a reduction of the dose. This pilot study concludes that there is a positive influence of pharmacist feedback information on the prescribing behaviour of the GP.

Strikwerda P, Bootsma-de Langen AM, Berghuis F et al. Drug treatment in a residential home: favourable influence of pharmacist's feedback on GPs prescribing behaviour. *Ned Tijdschr Geneesk* 1994;138:1770–1774.

Long-term use of benzodiazepines: can we prevent misuse or do we need to stop prescribing?

In a 635-bed teaching hospital at Liège, Belgium, Petit et al. studied the influence of hospital prescribing on the utilization of benzodiazepines. During admission 44.3% (!) of the patients received benzodiazepines, mostly for insomnia. A third of the patients were discharged with benzodiazepines and 6.8% of

all admitted patients were discharged with benzodiazepines which had first been prescribed in hospital.

In Belgium the use of hypnotics and anxiolytics is high. Habraken et al. compared the view and experience of the users of benzodiazepines with those of their prescribing general practitioners. Of an aselect population of 1455 adults, 9.1% used benzodiazepines over a period of six months or longer and at least four times a week. After one year 15 of 103 patients interviewed had reduced their medication to less than four doses per week (14.5%). Eighty-eight regular long-term users (mean age 63 years, 60% of them women) were identified; in general these individuals regarded their use of benzodiazepines positively and were content with their medication; 60% considered their use of benzodiazepines necessary. 75% of these patients had had experience with alternative treatments, mostly with positive effects, but these other forms of treatment had no effect on their chronic drug use.

The prescribing general practitioners involved with these patients similarly had a positive attitude towards the use of benzodiazepines. They had little intention of changing to any other form of treatment. A third of the practitioners had never tried to provide other strategies to their patients. The doctors were even less inclined than the patients to anticipate that stopping or diminishing the medication would be useful.

In The Netherlands benzodiazepines are the third most widely used group of pharmaceuticals, behind cardiovascular drugs and analgesics. About 6–7% of the Dutch adult population regularly uses benzodiazepines; 69% of these users are women. Van der Waals et al. concluded on the basis of data from the Dutch National Study (61 249 patients) that benzodiazepines are too often prescribed to women and too often for dubious reasons. They also found that 90% of the prescriptions were repeat and given by the doctor's assistant without a doctor-patient contact.

Vissers et al. similarly found that in a primary care centre (4600 patients) 77% of repeat prescriptions were given without the physician seeing the patient. Patients have to ask for a repeat prescription every month, since the Netherlands reimbursement system has limited the prescription of hypnotics and tranquillizers to a one-month prescription period. Vissers et al. found virtually no change in the pattern of long-term use over a period of years, but neither did they note any improvement in the symptoms, despite which 82% of chronic users were content with their medication. Adverse reactions were not experienced.

In a general practice serving 13 000 patients in Lincoln (UK), Wright et al. found only a small group of chronic users of benzodiazepines (0.5%). This low

percentage was attributed to a policy in this particular practice of reducing the prescription of benzodiazepines for the treatment of anxiety. Efforts to recruit chronic users into a programme offering withdrawal were, however, met with a disappointing response. Continued benefit and a lack of desire to stop treatment (almost half of the group positively desired to continue) ensured continued long-term use.

To improve appropriate use and to prevent chronic misuse of benzodiazepines five measures seem to be important: educating the public as to the risks and benefits of these drugs, careful diagnosis, prescription for the right indication, clear instructions to the patient and reassessment at the time of the first repeat prescription.

Complaints other than anxiety, stress and insomnia should not be treated with benzodiazepines, since patients will not benefit. When the complaints do not disappear, patients will nevertheless often request a repeat prescription, establishing a vicious circle. Benzodiazepines should never be prescribed for non-medical purposes.

Before prescribing the first dose of a benzodiazepine, the doctor should explain the likely duration of use. General health advice, supportive counselling, behavioural strategies, relaxation techniques and information on sleep should first be provided by every practitioner. Before repeating prescription, practitioners should reassess the indication and discuss the use of these drugs with their patients, looking together for alternatives.

On the other hand, doctors have to be aware of the negative effects of not prescribing benzodiazepines where they are genuinely needed, wanted or expected. Users of benzodiazepines belong mostly to a group of patients with weak somatic health and with a vulnerable psychic nature. Benzodiazepines can be considered as the salves on the wounded feelings caused by a hard society. It seems that this group of patients experience more benefit than harm from using benzodiazepines.

“When the practitioner has chosen for benzodiazepines, after carefully estimating the consequences of the patient’s disturbance, realizing that worse can be prevented and weighing the risk of unnecessary chronic use, he should not himself have any sleepless nights on the matter” (Lagro-Janssen).

Habraken H, Blondeel L, Soenen K. How useful is protracted use of benzodiazepines? Views of users and prescribers. *Huisarts & Wetenschap* 1994;37:285–288.

Lagro-Janssen T. Benzodiazepinen en de gemoedsrust van de huisarts. (Benzodiazepines and the peace of mind of the general practitioner.) *Huisarts & Wetenschap* 1993;36:402–404.

Petit N, Delporte JP, Anseau M et al. Drug utilization review of oral forms of benzodiazepines in a Belgian 635-bed teaching hospital. *Pharmacy World & Science* 1994;16:181–186.

- Tiller JWG. Reducing the use of benzodiazepines in general practice. *Br Med J* 1994;309:3–4.
- Vissers FHJA, Knottnerus JA, van der Grinten RF et al. Long-term use of hypnotics and tranquillizers in a general practice. *Huisarts en Wetenschap* 1993;36:405–408.
- Van der Waals FW, Mohrs J, Foets J. Sex differences among recipients of benzodiazepines in Dutch general practice. *Br Med J* 1993;307:363–367.
- Wright N, Caplan R, Payne S. Community survey of long-term daytime use of benzodiazepines. *Br Med J* 1994;309:27–28.

Chinese herbs: a risk of urinary malignancy?

In Louvain (Belgium) nephrectomies were performed on three young women as part of a pretransplantation programme. All three patients had followed a slimming cure (for 13–21 months) with pills containing Chinese herbs. Morphological findings confirmed extensive interstitial fibrosis of the kidney, reminiscent of another type of kidney disorder known as Balkan endemic nephropathy (BEN). The possibility that both conditions are related to the toxicity of aristolochic acid needs to be considered. This mutagenic and nephrotoxic alkaloid, incriminated as the cause of BEN, is found in the plant *Aristolochia*. However the slimming pills in question have also been shown to include materials from an aristolochic acid-containing herb (*Aristolochia fangchi*). As BEN may be complicated by malignant tumours of the urinary system, there has to be concern about the effects of long-term use of Chinese herbal slimming pills. Careful long-term follow-up is warranted.

- Cosyns JP, Jadoul M, Squifflet JP et al. Chinese herbs nephropathy: a clue to Balkan endemic nephropathy? *Kidney Int* 1994;45:1680–1688.

Ovulation-inducing drugs and neural tube defects: a reassuring case-control study

In a case-control surveillance programme the relation between neural tube defects (NTD) and the use of ovulation-inducing drugs (clomiphene, follicle-stimulating and luteinizing hormones, human chorionic gonadotropin and bromocriptine) was investigated. Using data from the Slone Epidemiology Unit Birth Defects Study (Boston, Philadelphia, Toronto) a group of 1034 subjects with NTD (spina bifida, anencephaly, encephalocele) was compared with a control group of 4081 subjects having other major congenital malformations.

Ovulation-inducing drugs proved to have been taken by the mother either during the pregnancy or during the six months prior to the last menstruation in

3.0% of women in the case group and 2.8% in the control group; the relative risk was 1.1 (0.8–1.7). The relative risk for use of clomiphene was 0.8 (0.5–1.3) and for the hormones FSH + LH and HCG 1.5 (0.7–3.4). Since the 1970s, in the light of case reports and small cohort studies, a relation between NTD and ovulation-inducing drugs has been suspected. Although the number of cases and controls associated with FSH + LH, HCG and bromocriptine were also too small to draw any conclusion, the findings of Werler et al. in this larger study suggest that the use of ovulation-inducing drugs (specifically clomiphene) does not increase the risk of NTD.

Werler MM, Louik C, Shapiro S et al. Ovulation induction and risk of neural tube defects. *Lancet* 1994;344:445–446.

Does early administration of epidural analgesia affect the obstetric outcome?

Does epidural analgesia affect the obstetric course and outcome of labour and delivery? This question was studied in two randomized series, reported by Thorp et al. and Chestnut et al. The results of the two studies contrast sharply.

In a randomized, controlled, prospective trial, Thorp et al. (Kansas City, USA) compared the effects of epidural analgesia and narcotic analgesia in a group of nulliparous women going spontaneously into early labour at term. Opioid analgesia was given using 75 mg of meperidine and 25 mg of promethazine hydrochloride intravenously. Epidural analgesia was given with 0.25% bupivacaine followed by continuous infusion of 0.125% bupivacaine, maintaining analgesia at a T10–12 dermatomal level. Initially a sample size of 100 patients in each group was planned, but the study was terminated after 93 patients had been studied because of a statistically significant increase in caesarean delivery in the group receiving epidural analgesia. In the narcotic group ($n = 45$) only one caesarean section was performed against 12 in the epidural group ($n = 48$). Most of the caesarean deliveries were related to dystocia (16.7%). Thorp et al. found also a statistically significant prolongation of labour in the first and the second stage in the epidural group.

Chestnut et al. (Iowa City, USA) studied the obstetric course of 150 nulliparous women with a cervical dilatation of at least 3 cm, but less than 5 cm, receiving oxytocin and requesting epidural analgesia; patients were randomized to receive epidural analgesia early (< 5 cm cervical dilatation) or late (> 5 cm dilatation). The early group received intravenous nalbuphine until 5 cm dilatation was achieved. The epidural analgesia was given using a test dose of 1.5%

lidocaine (+ epinephrine) followed by a bolus of 0.25% bupivacaine and a continuous infusion of 0.125% bupivacaine. No increase in the frequency of instrumental delivery or caesarean section was found, nor was there any prolongation of labour in the second stage or any greater frequency of dystocia.

In a second paper Chestnut et al. compared the effects of early and late epidural analgesia in a randomized group of 344 nulliparous women in spontaneous labour. No oxytocin was administered. The results were similar to those in the previous series: there was no prolonged labour, nor any increase in instrumental deliveries or caesarean section.

What does this mean? In an editorial comment Dewan and Cohen point out that the operative delivery rates in the study by Chestnut et al. in women receiving oxytocin are already far higher than those found in the control group of Thorp et al. The two studies cannot therefore be compared in all respects. In the study by Thorp et al., methodological approaches as well as the means of randomization and the protocol of obstetric management may be questioned. The conclusions of the studies by Chestnut et al. provide only evidence that the risk of caesarean section is not increased by epidural analgesia in the first stage of labour as compared with intravenous analgesia. Dewan and Cohen suggest that dysfunctional labour may well have a more critical effect on obstetric outcome than does epidural analgesia.

Chestnut DH, Vincent RD, McGrath JM et al. Does early administration of epidural analgesia affect obstetric outcome in nulliparous women who are receiving intravenous oxytocin? *Anesthesiology* 1994;80:1193–1200.

Chestnut DH, McGrath JM, Vincent RD et al. Does early administration of epidural analgesia affect obstetric outcome in nulliparous women who are in spontaneous labour? *Anesthesiology* 1994;80:1201–1208.

Dewan DM, Cohen SE. Epidural analgesia and the incidence of cesarean section. Time for a closer look. *Anesthesiology* 1994;80:1189–1192.

Thorp JA, Hu DH, Albin RM et al. The effect of intrapartum epidural analgesia on nulliparous labour: a randomized, controlled, prospective trial. *Am J Obstet Gynecol* 1993;169:851–858.

Hired therapeutic beds: a source of nosocomial infections

Orr et al. reported a case of a nosocomial infection with vancomycin-resistant *Enterococcus faecium* (VRE). A 53-year-old woman had been nursed on a hired low-airloss bed after surgery for thoracic aneurysm. The postoperative recovery was complicated by respiratory tract infection. She died six weeks after admission. In blood cultures VRE was collected. VRE was isolated from the covers of the therapeutic bed. VRE was also isolated from clinical specimens from two

other patients who had been nursed on beds supplied by the same manufacturer. In the UK such low-airloss beds, which are expensive, are usually hired from manufacturers when they are needed. After use the beds are returned to depots for decontamination. Therapeutic beds must be considered as a potential source of inter-hospital transfer of nosocomial infections.

Orr KE, Gould FK, Perry JD et al. Therapeutic beds: the Trojan horses of the 1990s. *Lancet* 1994;344:65–66.

Suing the doctor: the reason why. (2). Poor communication behaviour of providers increases litigious feelings of disappointed patients!

What prompts patients to sue doctors or hospitals? There must be factors other than poor outcome alone; not all adverse outcomes result after all in suits, and threatened suits do not always involve adverse outcomes.

Huycke and Huycke of the University of Oklahoma interviewed by telephone 502 patients or relatives of patients who had called plaintiff attorney's offices in five states in the USA. They found that poor communication between patient and provider(s) is an important factor contributing to the number of calls received by attorneys. More than half of the potential plaintiffs reported an unsatisfactory relationship with their provider prior to the disappointing outcome. Television advertising by law firms and explicit recommendations by health care providers to seek legal counsel were also important factors in deciding to call an attorney.

Nearly half of the potential plaintiffs mentioned financial difficulties as a part of their grievance (outstanding medical bills, unemployment, lack of health insurance). Only 3.8% of the calls led to the filing of a lawsuit, the remainder most commonly proceeding no further for economic reasons (the estimated damages were insufficient to cover the cost of litigation).

Beckman et al. reviewed 3878 pages of transcript of 45 plaintiff discovery depositions in malpractice suits filed against a metropolitan medical centre in Rochester (NY). The suits involved serious problems: death (12), anatomical deformity (16), functional deformity (6) and emotional impairment (9). The plaintiffs were generally young and well educated. A problematic relationship between patient and provider was found in 71% of the suits. Desertion or failure to make oneself available (impossibility of contacting the practitioner) was a factor identified in 32% of cases. Other common elements in the decision to sue included failure to respect the views of the patient and/or the family

(29%), poor delivery of information (26%) and failing to understand the patient's and/or the family's perspective (13%). Beckman et al. also noted a role played by other health care professionals in the decision to sue: 17 of 31 plaintiffs interviewed affirmed that failure of the practitioner was suggested by other professionals, such as specialists consulted by the patient following the unfavourable outcome.

Lester and Smith carried out an interesting experiment with 160 adult college students. The volunteers were asked to view a videotape and to complete a questionnaire. Two videotapes were played relating to an identical patient with an identical complaint treated by a physician with either positive or negative communication skills. Eighty volunteers viewed the videotape showing "positive communication behaviour", including eye contact, a friendly tone of voice, presentation of information and requests for information, smiling, appropriate physical touch (shaking hands), self-disclosure, acknowledgment of verbalizations, appropriate praise and a relatively long period of contact. The other eighty volunteers viewed the videotape with the "negative communication behaviour" characterized by lack of eye contact, harsh and clipped tones of voice, criticism, a minimal presentation of information (and minimal request for information), non-smiling facial expression, no friendly physical contact, no acknowledgment of verbalizations, no praise, and a relatively short period of contact.

Each group was divided into four subgroups ($n = 20$). The subgroups were confronted with a different outcome of the medical treatment: a good outcome, a bad outcome in which the physician was not at fault, a bad outcome for uncertain reasons and a bad outcome with the physician at fault. The results in the eight subgroups showed that the use of negative communication behaviour by the physician increased litigation intentions. Where a physician related to a patient in a "negative" manner this was prone to trigger increased litigious feelings in the event of a bad outcome, whereas a physician relating to a patient in a "positive" manner did not. The study also suggested that patient education (informed consent) may reduce the frequency of litigation. "When patients are informed enough to be certain that a bad result is not the physician's fault, negative perceptions and perhaps litigiousness remain low."

Beckman HB, Markakis KM, Suchman AL et al. The doctor–patient relationship and malpractice. *Arch Intern Med* 1994;154:1365–1370.

Huycke LI, Huycke M. Characteristics of potential plaintiffs in malpractice litigation. *Ann Intern Med* 1994;120:792–798.

Lester GW, Smith SG. Listening and talking to patients; a remedy for malpractice suits? *West J Med* 1993;158:268–272.

Defensive medicine: widening the concept

Defensive medicine leads to substandard care and unnecessarily high cost. Positive defensive medicine is characterized by overuse of medical resources (unnecessary diagnostic tests, therapeutic interventions, referrals for a second opinion) while negative defensive medicine consists of withholding or withdrawing necessary medical treatment. Marvin Dewar, in a commentary in *Family Medicine*, has estimated the overall cost of defensive medicine in the USA at 3.5 times the cost of malpractice liability premiums.

Defensive medicine is commonly defined as comprising "deviations, induced by a threat of liability, from what the physician believes is, and what is generally regarded as, sound medical practice".

In the USA defensive medicine is strongly associated with the threat of liability. However, even in countries where malpractice litigation is rare, defensive medicine is seen. In the Netherlands, for example, the number of claims against physicians is less than one-tenth of the corresponding number in the USA and malpractice claims against general practitioners are uncommon; research nevertheless has shown that defensive medical behaviour by Dutch GPs appears to be increasing. Up to 17% of referrals from GPs to internal medicine specialists (Grundmeijer) and 27% of diagnostic test ordering occurred because of defensive behaviour (Van Boven et al.). Marjan Veldhuis from the Department of General Practice of the University of Amsterdam concludes that other reasons unrelated to the fear of litigation must play a role in defensive behaviour.

Veldhuis asked 56 GPs to identify factors contributing to their own defensive behaviours. Diagnostic uncertainty, pressure on time, confrontation with unfamiliar patients and language problems on the patient's part were identified as factors leading to behaviour which deviated from ordinary standards of clinical practice. However, concern about interpersonal manifestations of discontent by patients (conflicts, lack of confidence, loss of appreciation) was found to be a strong reason for defensive behaviour. Doctors want to prevent irritation and (minor) conflicts with patients, maintaining a workable and trustful relationship.

Dutch GPs legitimate their defensive behaviour too often by pointing their finger at aggressive, distrustful and demanding behaviour by patients. They feel uncomfortable with difficult patients. However Henk Grundmeijer, a general practitioner himself, states that the real problem for the doctor is not the difficult behaviour of the patient, but his lack of preparedness for handling "difficult" complaints. Vague complaints, such as tiredness, dizziness or abdominal pain can induce feelings of inability on the doctor's part. Basic uncer-

tainty about the diagnosis, and inability to offer a solution to the patient's problem, makes the doctor feel uneasy. He wants to do something, he wants to help his patient, he wants to be a good doctor. That is the point at which unnecessary ordering of tests and referral can start.

Another question is whether technically unnecessary tests are always in all respects inappropriate? Sometimes maintaining a trustful relation with the patient is an important prerequisite to good care. Ordering unnecessary tests can sometimes enable the physician to gain time in this process or make it easier to reassure the patient. Discontented and anxious patients are at risk of undergoing unnecessary interventions; we therefore have to find compromises. However, the most important element is to maintain good communication between the doctor and the patient. The doctor must take time to provide a clear explanation. Not only the GP has to understand the patient's problems, the patient too has to understand the doctor!

Defensive medicine seems to be a problem with explanations other than mere fear of litigation. It is also related to the way doctors are coping with uncertainty. "Specific education programs may be needed to help physicians deal with medical uncertainty, recognize wasteful medical practices, and use effective clinical decision-making techniques" (Dewar).

van Boven C, Dijksterhuis PH, Lamberts H. Defensive medicine behaviour of GPs with test ordering. *Huisarts Wet* 1994;37:473–477.

Dewar MA. Defensive medicine: it may not be what you think. *Fam Med* 1994;26:36–38.

Grundmeijer HGLM. Defensief handelen: lastige klanten of lastige klachten? (Defensive behaviour: difficult patients or difficult complaints?) *Huisarts Wet* 1994;37:458–463.

Veldhuis M. Defensive behavior of Dutch family physicians. Widening the concept. *Fam Med* 1994;26:27–29.

Becoming conscious during general anaesthesia: patients in panic

Waking up during general anaesthesia is an alarming situation for the patient. Particularly when neuromuscular blockade is used, it is difficult for anaesthetists to recognise that a patient has become aware of the operation or, even worse, that the patient is feeling pain sensations. There are no objective measures of the anaesthetic state. Patients who have experienced such an episode recall a state of helplessness and powerlessness, leading to sensations of agony and panic.

The incidence of conscious awareness and recall is estimated at 0.2–0.4% of all interventions with general anaesthesia. The incidence might be higher in

operations for major trauma because of the use of lower anaesthetic concentrations (to preserve cardiovascular functions). A higher incidence has also been reported with elective surgery. Lyons found an incidence of 0.9% of awareness without pain associated with Caesarean section as an acceptable complication of anaesthesia. Awareness of pain sensations was reported only in 0.01% of cases during elective general anaesthesia.

Moerman et al. interviewed 26 patients with memories of intraoperative events. Twenty-three of them recalled sounds: voices, music, the sound of metal clattering, etc. Twenty of them experienced a sensation of paralysis, with an inability to move their legs or arms. Ten patients felt pain sensations, while five others reported having been aware of the operative procedure without feeling pain. Most of the patients (24) recalled feelings of anxiety and panic. Some of them believed that an anaesthetic mishap had occurred, that they had been left unattended, that they were in coma or that they were going to die. Twenty patients attempted to alert someone, but they found themselves powerless to do so. Eighteen of them had unpleasant after-effects and post-traumatic stress disorders, such as sleep disturbances, dreams and nightmares, flashbacks and anxiety during the day. Two of the patients indeed needed psychotherapeutic help.

Prof. Jones of Cambridge University's Department of Anaesthesia believes that, besides the recalls, an implicit memory of intraoperative events can be the cause of unpleasant after-effects. Most studies of implicit memory after general anaesthesia are impeded by the lack of objective measures of the anaesthetic state. However, Lyons reported that 6.1% of the women who had undergone Caesarean section had dreams about events that took place in the operating theatre.

As mentioned, it is often difficult for anaesthetists to recognise premature awakening of the patient. Moerman et al. assessed twelve anaesthetic records. Only in three records had there been any awareness of the fact; in the other records it was not possible to find any pointers to failure of anaesthesia. Patients who had tried to tell the anaesthetists or hospital staff afterwards of their experiences too often encountered denial or indifference, and they experienced disbelief and scepticism in their social circle. Two thirds of them changed their opinion about anaesthesia, becoming more afraid of undergoing a subsequent operation.

Not only does the question arise as to whether the possibility of awareness during general anaesthesia should be raised when seeking the informed consent, it is also evident that anaesthetists have a role to play in discussing and dealing with traumatic experiences related to anaesthesia. Explicitly putting questions as

to the patient's experiences can be of value in dealing with the unpleasant after-effects.

Jones JG. Perception and memory during general anaesthesia. *Br J Anaesthesia* 1994;73:31–37.

Jones JG. Memory of intraoperative events. *Br Med J* 1994;309:967–968.

Lyons G, Macdonald R. Awareness during Caesarean section. *Anaesthesia* 1994;46:62–64.

Moerman N, Bonke B, Oosting J. Awareness and recall during general anesthesia. *Anesthesiology* 1993;79:454–464.

Acute appendicitis: the risk of too much haste versus the risk of waiting too long

In his book "Searching for Safety" (Transaction Publishers, New Brunswick USA, Oxford UK, 1989) Aaron Wildavski noted that there can be no safety without risk. The manner in which accuracy in the procedure for diagnosing acute appendicitis is balanced against the risk of complications caused by postponed operation, shows how risk and safety are intertwined. A review of the literature has found a correlation between high diagnostic accuracy (79%) and a high perforation rate in acute appendicectomies (17%).

At a general hospital in Utrecht (The Netherlands) 235 acute appendicectomies were performed (122 men and 113 women with a mean age of 27.5 years) between 1989 and 1991. In a retrospective study, data were collected on the duration of symptoms, delay on the part of doctor or patient, pathology and septic complications. An accurate diagnosis was made in 80%; one in five operated patients had a negative appendicectomy. Diagnostic accuracy was higher for men (93.4%) than for women (65.6%). Diagnostic problems in differentiating appendicitis from painful gynaecologic disorders, and the risk of infertility after perforation of the appendix can probably explain this difference.

The overall perforation rate was 18.3%, with a higher incidence in young children and adults aged over 50. Septic complications were found in 25% of the patients with a perforated appendix. This was about three times higher than in patients in whom an unperforated appendix was removed.

Symptoms lasted on average 1.68 days. However in 12.3% of the cases a delay on the part of the doctors was found, averaging 3.4 days. Surgeons were in 59% of the latter cases responsible for the delay; only two cases of delay were due to general practitioners. A strong correlation was found between delay and the perforation rate. Objective data (temperature, sedimentation rate, leucocyte count) were found to be of limited diagnostic value.

Patients with uncomplicated appendicectomy stayed on average 5.5 days in hospital, but when the appendix was perforated the hospital stay was prolonged to an average of 10.9 days.

The authors recommend that patients should not be observed too long before the decision is taken to operate. In children and the elderly appendicectomy should be considered earlier. In sexually mature women an additional laparoscopy can be of help in decreasing the number of unnecessary appendicectomies.

It is generally accepted that delay in appendicectomy is associated with an increased risk of perforation. However, the report of the National Confidential Inquiry into Perioperative Deaths has shown that operating during the night was associated with some risk in the United Kingdom: in such cases there was too much inappropriate preoperative management, inappropriate operation, complications to surgery and prolonged hospitalisation.

McLean et al. found a 25% incidence of negative appendicectomies in a series of 578 acute operations in a general hospital in Livingstone (Scotland). Unnecessary haste to operate by junior surgeons (39% of negative appendicectomies were performed within 2 h of presentation), especially in the small hours of the morning, was associated with a high percentage of unnecessary operations (50%!). The conclusion of the authors, regarding the high rate of unnecessary operations, is that a junior surgeon could well wait for some hours in order to obtain the advice of more senior colleagues. But how long can operation be delayed at night without a risk of complications?

In a hospital for children in Dublin (Ireland) Surana et al. compared 451 children operated within 6 h of admission with 244 children operated between 6 and 18 h of admission. In the former group the perforation rate was 18% versus 21% in the latter. Both groups had a 90% diagnostic accuracy rate. Postoperative complications were found to be low and not significantly different between the two groups (4% vs. 4.9%); nor did the duration of hospital stay differ significantly (3.5 vs. 4.1 days). Surana et al. concluded that appendicectomy can safely be postponed overnight, without increasing the complication rate.

In different countries circumstances are not necessarily comparable. However, uncertainty as to the diagnosis and fear of complications by waiting too long are everywhere familiar problems. The specific study of different groups of patients at risk (children, the aged, sexually mature women) may provide more exact guidelines for taking decisions in these particular patients. However, the best warranty for a high degree of diagnostic accuracy and a low complication rate lies in the skills of an experienced surgeon, who can handle the uncertainties of diagnosis and the risk of complications.

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Immunoglobulin contaminated with hepatitis C virus

Bjøro et al. investigated in a Norwegian group of 55 patients with primary hypogammaglobulinemia the prevalence and clinical course of hepatitis C. Twenty patients were treated intravenously with an immune globulin product (Gammonativ, KabiVitrum) which was later found to contain a hepatitis C virus (HCV); 17 of them (85%) were seropositive for HCV RNA. Only one of the other 35 patients who were not exposed to the contaminated immune globulin was HCV RNA positive. The HCV infection caused severe liver disease with chronic active hepatitis (5 patients) and cirrhosis (6 patients). Two patients with cirrhosis died of liver failure and another received orthoptic liver transplant. Bjøro et al. reported a poor response to treatment with interferon: only 4 of the 10 patients treated with interferon had transient biochemical responses.

Hepatitis non-A and non-B infections after treatment with immune globulin in patients with hypogammaglobulinemia were earlier reported by Björkländer et al. in Sweden. They also encountered an aggressive hepatitis with a 25% mortality rate. In the United States hepatitis non-A, non-B associated with immune globulin therapy had never been reported until an outbreak of HCV infection occurred in October 1993. In October 1994, 137 cases of HCV infection were reported to the Centers for Disease Control and Prevention; 88 cases proved to be related to intravenous immune globulin therapy (among them 51 patients with a primary hypogammaglobulinemia). In Spain and Sweden too, HCV infections to commercially available intravenous immune globulins were reported.

Despite these reports of hepatitis, treatment with intravenous immune globulin is relatively safe, in the opinion of Richard Schiff of Durham's Duke University. The manufacturers have adjusted the fractionating and testing processes by incorporating additional viral-inactivation methods. However, active case-finding and evaluation of patients at risk (primary hypogammaglobulinemia) should be done, since we are not aware enough of the consequences of HCV infection in these patients.

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Reducing the risk of falls in the elderly

Falling is common in the aged. Nearly one third of the elderly aged 65 or over experience a fall each year. Graham and Firth indeed estimated in an inner London general practice an annual rate as high as 667 falls per 1000 patients. The risk of falls increases with age. Women fall more often than men; and institutionalization brings with it a greater risk for falling than living in the community. Sometimes falling is the first signal of a medical disorder.

Although most falls cause injuries (and some 10–15% lead to serious injuries, half of which are fractures), only 25% of falls are reported to the medical services. One side-effect of falling is loss of self-confidence and limitation of daily activities, leading to a vicious circle, since old people who are no longer in training are more prone to falling than are those taking normal exercise.

Mary Tinetti et al. studied in New Haven (USA) the effects of targeted intervention in preventing falls in a group of 301 elderly people, all over 70 years of age and living in the community. The 93 men and 208 women included in the study all had at least one risk factor for falling: postural hypotension, use of sedatives, use of at least four prescribed medications, or some form of functional impairment, notably in arm or leg strength or range of motion, balance, transfer skills or gait. Visiting nurses and physical therapists conducted a multifactorial instruction and exercise programme involving 153 of the subjects. The intervention programme included review of medication, education about sedatives, environmental modifications, and training to improve transfer skills, gait, balance and strength. This multiple-risk-factor intervention strategy resulted in a 30% reduction of falls in the intervention group as compared with the control group. Although the numbers were small it was also notable that fewer injuries and fewer episodes of medical care associated with falls were reported in the intervention group. Results of intervention were found most clearly in elderly persons with impairment of balance, gait or toilet transfer skills, or receiving polypharmacy. The conclusion of Tinetti et al. is that modified risk-factor intervention strategy can reduce the risk of falling.

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Did you wash your hands, doctor?

Hospital-acquired infections are a major cause of iatrogenic morbidity and mortality. As early as 1847 Ignaz Semmelweis suggested the important role of hand-washing in preventing the transmission of nosocomial pathogens. Good hygienic measures are important in- and outside hospitals, especially in units and wards where severely ill patients are treated and where invasive techniques and devices are used.

Despite our advances in epidemiology and infection control, hand-washing as the most effective single measure for prevention is still too often neglected by health care workers. This omission is encountered in intensive care units as well as in outpatient practices. Doctors, nurses and other health care workers seldom wash their hands before patient contacts.

In the emergency department of a hospital in Indianapolis (USA) hand-washing behaviour was recorded in 409 contacts between patients and health care workers (22 physicians and 13 nurses). Registered were 272 "clean" contacts, 46 "dirty" contacts and 91 "gloved" contacts. Hand-washing was reported in only 32% of all contacts, 18% after clean contacts and 60% after dirty or gloved contacts. Nurses proved to perform better than physicians (58% vs 18%!).

Why has hand-washing so often been neglected? Too busy, skin irritation, wearing gloves or "I didn't think about it" are the most common excuses. Despite protocols, in-service education, distribution of leaflets, lectures, automatic dispensers and feedback on hand-washing rates, the compliance of hand-washing in hospitals, even in intensive care units, does not improve. Routine observation with feedback can be effective but the effect is only temporary. It seems to be the case that health care workers are difficult to educate. Thus, William Jarvis from US Hospital Infections Programm (NCID/CDCP), suggests educating patients to request doctors and nurses to wash their hands before touching them. I recall a participant of the ISPIC conference in 1990 in Copenhagen making a remark about a paediatric hospital where children were rewarded with a teddy bear if they requested their doctor to wash his or her hands before and after the physical examination!

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Dysfunctioning doctors

In the literature no studies are known about dysfunctioning of doctors. Interviewed representatives of the Dutch medical association, insurance companies and medico-legal institutes regarded the problem as serious. They found the handling of the problem to be characterized by lack of ability, and lack of procedures and possibilities for sanction. Dysfunctioning doctors can continue their practice for years without intervention. A conspiracy of silence seems to surround the dysfunctioning doctor.

The Dutch Inspectorate of Health Care has investigated dysfunctioning of medical specialists attached to hospitals. Retrospectively the boards and staff of 17 general hospitals, 2 categorical hospitals and 2 university hospitals were interviewed by questionnaire about their experience with dysfunctioning specialists.

From 2000 specialists attached to these hospitals during a period of 5 years, 5% was found dysfunctioning. In 40% the dysfunctioning involved social and communicative skills, in 27% medical technical skills and only 6% had to do with abuse of alcohol or drugs. The consequences were seen as most serious in cases of alcohol or drug addiction, fraudulent practice, sexual intimidation and negligence.

The hospital boards were impeded in handling the problem by lack of procedures and subtle sanction possibilities. Since new legislation (Quality Law in Hospitals) has been passed, more effective sanctions are possible, although prevention is preferred. The authors propose more intensive application procedures and evaluation of medical functioning for specialists in hospitals.

Lens P, van der Wal G. Een onderzoek naar dysfunctioneren van specialisten. *Ned Tijdschr Geneesk* 1994;138:1127–1131.