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**Hannes Wahlroos**

DIRECTOR GENERAL, PROFESSOR  
National Agency for Medicines

## From policy to action

Last autumn, the Ministry of Social Affairs and Health published Finland's first official Pharmaceutical Policy document (STM 2003:11). Comparable policy agendas have been used routinely as guidelines for quite some time elsewhere in the social and health care sector. In a rapidly changing world, the pharmaceutical field cannot be left to rely on "ad hoc" policy – intentional planning is certainly needed.

Public reaction to outlines of the Pharmaceutical Policy 2010 has been moderate or downright subdued. The most likely reason for this could be that there is no need for significant changes of principle behind the structure of pharmaceutical services, especially since generic substitution was implemented in April 2003. The subject that has raised the most discussion concerns the proposed gradual elimination of the progressive pharmacy fee, which would enable a reduction in the retail prices of medicines by about 7 percent. The Ministry of Social Affairs and Health has requested The National Agency for Medicines in Finland to define the matter by 30.11.2004.

Many other matters have failed to elicit much comment. This can be interpreted as acceptance of the proposals, which leads one to expect that the policy guidelines will be put into action. To mention a few examples:

- The measures taken by the Social Insurance Institution and the Centre for Pharmacotherapy Development in Finland in developing a system of prescription information feedback in order to promote rational prescribing of medicines.
- Promoting the Drug Utilisation Review scheme at pharmacies.
- Increasing and promoting public awareness of correct and safe usage of medicines, and the inclusion of drug information in health education at school.
- Reviewing the drug reimbursement system.
- Ensuring the equalisation of medicine prices, and the passing any potential discounts granted by the pharmaceutical industry to all pharmacists and consumers.
- Reviewing the functions and activities of the current pharmaceutical authorities, and possibly reorganising the work between them.
- Finland's more active participation in collaboration at EU level.
- Providing the operational prerequisites for pharmaceutical research.

No policy document can be all-inclusive. It has been pointed out, and with reason, that the Pharmaceutical Policy 2010 outlines lack developmental visions of drug utilisation at hospitals and health centres. This omission should be taken into consideration in future action programmes. Safe, efficient and economical pharmaceutical care can only be provided at hospitals, if their drug utilisation is based on sufficient expertise and guidance all the way from the hospital pharmacy to the bedside of the patient.

This year, the National Agency for Medicines will focus especially on increasing the influence and impact on the EU, on starting the general planning of pharmaceutical services, and on advancing its Internet services. In the supervision of medical devices, a risk management model will be produced for health care units. These objectives have been agreed upon jointly with the Ministry of Social Affairs and Health.

As the Ministry's policy outlines extend until the year 2010, there are still seven years left for various stages of implementation. Our point of departure is favourable. Let us reinforce our current strengths and eliminate our perceived weaknesses.

# Summary

Kati Ojala

GYNAECOLOGIST, LECTURER

University of Oulu, Oulu University Hospital

## Treatment of menstrual disturbances

*Nowadays the average age of menarche is 12.5 years, and a woman will in her lifetime menstruate 350–400 times. Menstruation is a modern problem.*

Until as late as the 1800s girls usually got married when they reached puberty. In the mid 1850s, however, puberty was reached later than at present, it used to be at 17 years. At the time when women got married at the age of menarche and contraception was unknown, the rhythmic cycle of a woman's life was maintained by pregnancies and by lactation, which was used as a means of contraception, up until the age of menopause. Consequently, a woman in her lifetime may at best only have had a couple of menstruations.

### The menstrual cycle

In the follicular phase, the follicle-stimulating hormone (FSH) secreted by the anterior pituitary gland stimulates the ovaries. One of the ova is selected to become the dominant follicle and it grows bigger than the others. The dominant follicle produces oestrogen, which is the predominant hormone during the initial stage of the menstrual cycle. Oestrogen promotes proliferation of the endometrium while the number of small arterioles and glandular structures in the functional layer of the endometrium is increased.

Towards the middle of the menstrual cycle, the level of oestrogen and the luteinising hormone (LH) secreted by the anterior pituitary reaches its peak. The LH peak causes the ovum to become loose, i.e. ovulation occurs. Following ovulation the ovarian follicle becomes the corpus luteum. This secretes progesterone for the subsequent 14 days. The glandular activity in the endometrium accelerates and mucus is produced in increasing amounts.

This is the secretory phase of the uterine endometrium. If no fertilisation occurs, the corpus luteum begins to degenerate after 14 days. The decrease of progesterone secretion results in the start of the menstrual discharge. The functional endometrium is shed together with the discharge of blood and tissue debris. The endometrium has various mechanisms for maintaining the discharge: fibrinolysis comes into effect in order to prevent the blood from clotting and keep it flowing. Prostaglandins also cause the uterus to contract in order to empty it of blood as effectively as possible. But as soon as the discharge has started an effective regeneration of the endometrium begins. The duration of the menstrual discharge depends on the balance between, on the one hand, the factors which maintain the discharge and, on the other, those that stimulate the regeneration.

Menstrual disturbances are very common. There is probably no woman who has not had menstrual problems on occasion. The menstrual discharge may be profuse or too scanty, too frequent or too infrequent; it may occur irregularly or be absent altogether. The following is a description of a sample patient for each problem.

A discussion of the cause and treatment of menstrual discharge disorders is started by reckoning the age of the woman. The cause of discharge disorders in women at different ages is typical of their age group. Profuse and irregular menstrual discharge is a typical problem for young women, for instance. The cause of the problem is nearly always a disturbance in ovarian fol-

licle maturation, i.e. some of the cycles are anovulatory. The same problem with the same explanation is also found at the other end of the fertile age, i.e. women nearing the menopause. In age groups in between the two, the profuse and irregular discharge is explained by something other than ovulatory disorders, the most likely explanation being found in the uterus. Ignoring hypothyroidism or hyperthyroidism and hyperprolactinemia, systemic diseases as an underlying cause for a discharge problem are very rare and in practice need not be considered.

The focus in problem solving is on the endocrinological causes.

### Profuse menstrual discharge

The cause of profuse menstrual discharge may be found in the uterus: fibromyoma, adenomyosis, a polyp or endometrial hyperplasia, or simply an IUD (intrauterine device). On rare occasions, the underlying problem may be a congenital prostaglandin imbalance or excessive fibrinolysis. The most common hormonal cause is an anovulatory cycle.

#### Ritva 45 years

*She has been delivered of three children, the contraception method used being sterilisation. Her menstrual cycle is fairly regular, 28–30 days. The duration of discharge has in the past been 5–6 days, and the flow of discharge has always been fairly copious. During the past year, the discharges have become even more copious and are of longer duration. The doctor considers the uterus to be “clumsy”, Pap smear is of class 1, similar to the endometrial biopsy.*

### Ultrasonography of the vagina reveals two small fibromyomata in the uterine muscular layer.

- There are a couple of treatment alternatives. The amount of menstrual discharge could be decreased by 20–30% by using anti-inflammatory analgesics. The alleviation of menstrual pain would be an additional advantage. In practice, few women want to take regular high doses of anti-inflammatory analgesics, considered to be painkillers. Another drug which reduces the amount of menstrual discharge is tranexamic acid, an inhibitor of fibrinolysis. Similarly to anti-inflammatory analgesics, it is taken on the days when the discharge is most profuse. It reduces the amount of discharge by as much as 50%. Contraceptive pills containing natural oestrogen could also be used to reduce the amount of discharge. It is likely that this woman has been sterilised because she is unwilling to take pills. A hormonal IUD is recommended as the primary treatment alternative in this case. The reduction of discharge is as high as 90% in users of a hormonal IUD, and after using it for a year 30% of the women attain amenorrhoea. Oligomenorrhoea is also common during the first months of use.

- In this case, the fundamental cause of the profuse discharge remains incompletely explained. The patient's age may be the reason why some of the cycles are anovulatory, in which case only the oestrogen effect is shown on the endometrium. Oestrogen has a thickening effect on the endometrium until the endometrium atrophies due to old age. This is contradicted by the fact that the menstrual discharges are regular and relatively similar time after

time. Small fibromyomata could be another possible explanation. In this case the efficacy of a hormonal IUD is not 100% certain. In contemplating surgery, the options include ablation of the endometrium and hysterectomy.

**Riina 15 years**  
Menarche at 12 years with a constantly irregular cycle 28–45 days. The duration of menstrual discharge is long, even 9–10 days, and the discharge is profuse. Ingestion of iron keeps the haemoglobin level with difficulty above 100.

- The long, irregular cycle in the young woman is explained by anovulatory cycles. The ovulation is regulated by FSH and LH secreted by the anterior pituitary; the secretion is stimulated by gonadotrophins from the hypothalamus in rapid, frequent pulses. The hypothalamus matures slowly, and the gonadotrophin secretion is not yet taking place in quick enough pulses in a teenage girl. During the first year after menarche only 15% of the cycles are ovulatory while 85% are anovulatory. Beginning from the start of menarche, the hypothalamus matures gradually during a period of 8–9 years, when it reaches the activity of that of an adult woman. The later the menarche, the slower the maturation.

- Appropriate treatment for the discharge disorder would be the contraceptive pill. A trial break in the administration of the pill could be taken after 6–12 months to see whether the patient's own cycle has become regular, i.e. whether the time has solved the problem.

### Menstrual discharge too scanty

**Nina 38 years**  
Three pregnancies and one delivery, smokes 5 cigarettes a day. Contraceptive methods tried consist of an IUD and a hormonal IUD, but they were inappropriate. Contraceptive pills containing natural oestrogen are used at present. The first six months were trouble-free, even though the amount of discharge was reduced each time. The discharge finally ceased altogether.

- Very few examinations are required: pregnancy test, TSH and prolactin. If the gynaecological status is also normal, nothing needs to be done. The patient can continue taking the contraceptive pill.

### Menstrual discharge too frequent

The cycle is short from one time of onset until the next, i.e. 23 days, even less than 20 days at its shortest. These problems occur at both ends of the fertile age.

**Tiina 43 years**  
The cycle is short, 18–22 days. The duration of the discharge is 5–6 days, copious amounts at times. Two pregnancies; sterilisation used as the contraceptive method. TSH and prolactin are normal.

- An ovulatory disorder is likely. The FSH level is beginning to rise slowly after the age of 40. Hence the follicular phase is reinforced and the ovarian follicle matures even more quickly. Ovulation occurs as early as on the 10th day, and the corpus luteum remains weak. Appropriate treatment consists of progestin support with a potent luteal hormone



on the 10th–25th day of the cycle. The other alternative is the contraceptive pill.

### Menstrual discharge too infrequent

Hanna 24 years

No pregnancies, menarche at 12 years of age with an irregular cycle in the past. Taken the contraceptive pill for seven years with regular menstrual discharge at that time. The administration of the pill had been discontinued 8 months previously in the hope of becoming pregnant. Two months were trouble-free, followed by a prolongation of the cycle to 30–50 days. Findings at the time: mildly overweight, weight index 26. TSH and prolactin normal. Ultrasonography of the vagina reveals slightly cystic looking ovaries, does not actually fulfil the criteria of a polycystic ovary disease.

- As the patient wishes to become pregnant, it is recommended that she be referred to a fertility clinic for follow-up treatment. The patient could try a mild, cyclic progestin, e.g. dydrogesterone, during the queuing time.

### Irregular menstrual discharge

Eija 40 years

Two children; sterilisation used as the contraceptive method. The cycle regular in the past, 28–29 days, duration of 5 days. Irregular discharge for the previous four months: “Normal discharge at first, followed by eight days of no discharge. Discharge in tiny amounts followed thereafter, which lasted for five days. Then ten days without discharge followed, after which normal menstru-

al discharge appeared... etc.” Pap smear and endometrial biopsy are normal. In the right ovary, ultrasonography reveals a cyst which is without an internal echo, has a single chamber, and with a diameter of 4.6 cm.

- A small amount of oestrogen is probably secreted from the cyst, which is enough to confuse the endometrium. The cyst appears benign, however, and a 5 cm cyst in a woman of fertile age needs no treatment. The appropriate treatment would be a cyclic luteal hormone on the 12th–25th day of the cycle.

### Menstrual discharge is missing altogether

Outi 18 years

Menarche at 14 years of age with always irregular cycle, variation of duration 4–7 days, scanty. The menstrual discharge gradually ceased altogether; the last discharge having occurred five months previously. Status: 166 cm, 47 kg, weight index 17. Pregnancy test negative. Gynaecological status normal, except that the ultrasonography of the vagina revealed an endometrium tenuously thin.

- Progestin testing will be carried out as a follow-up, i.e. a luteal hormone, e.g. dydrogesterone, will be prescribed for 10 days. If menstrual discharge continues after treatment, no further examinations are necessary. If discharge does not occur, checking will be carried out of TSH, prolactin and FSH. A high level of FSH is an indication of ovarian insufficiency, i.e. FSH is trying to reanimate inactive ovaries. The underlying cause of the disorder

may be an autoimmune disease; such are, however, rare. If FHS is normal, which is the most likely outcome, the disorder is of the hypothalamus. The patient's slimness is an additional factor. A contraceptive pill is the most appropriate treatment. A pill with the lowest level of hormone may not have a sufficient amount of oestrogen, and consequently, menstrual discharge will still remain absent. A pill with a higher level of oestrogen is recommended in such a case. Some young women, especially those with an anorexic tendency, would prefer to use preparations intended for the treatment of the menopause rather than the contraceptive pill.

### Conclusion

When menstrual disorders occur in a woman, the precise problem is to be investigated first. Thereafter the patient's age is to be taken into consideration. Pregnancy, uterine disorders and the most common endocrinological disorders (those of the thyroid gland) are excluded. The problem usually consists of either profuse or irregular menstruation. The most appropriate medical treatment to reduce profuse menstrual discharge is the contraceptive pill or a hormonal IUD. A cyclic luteal hormone or the contraceptive pill is appropriate for controlling irregular menstruation.

# Summary

**Olavi Tokola**

PROFESSOR, HEAD OF DEPARTMENT

Marketing authorisation

National Agency for Medicines

## Marketing authorisations and decision making at the National Agency for Medicines in Finland

A consistent and resolute endeavour towards developing the activities and organisation of the National Agency for Medicines in Finland has been made in order to conform with the EU procedures of marketing authorisation, legislative reforms, and requirements imposed by the enlargement of the EU. Examples of this work include the abolition of the Management Board in the year 2000, the reorganisation of the Committee on Safety, Efficacy and Quality of Medicines in 2002, and the reorganisation of the Agency in 2003, involving the increase of resources at the Department for Marketing Authorisations, and the relocation to new premises in the autumn of 2004.

### The new organisation

The structure and scope of the organisation were codified at the end of 2002, and the reorganisation was gradually introduced last year. The

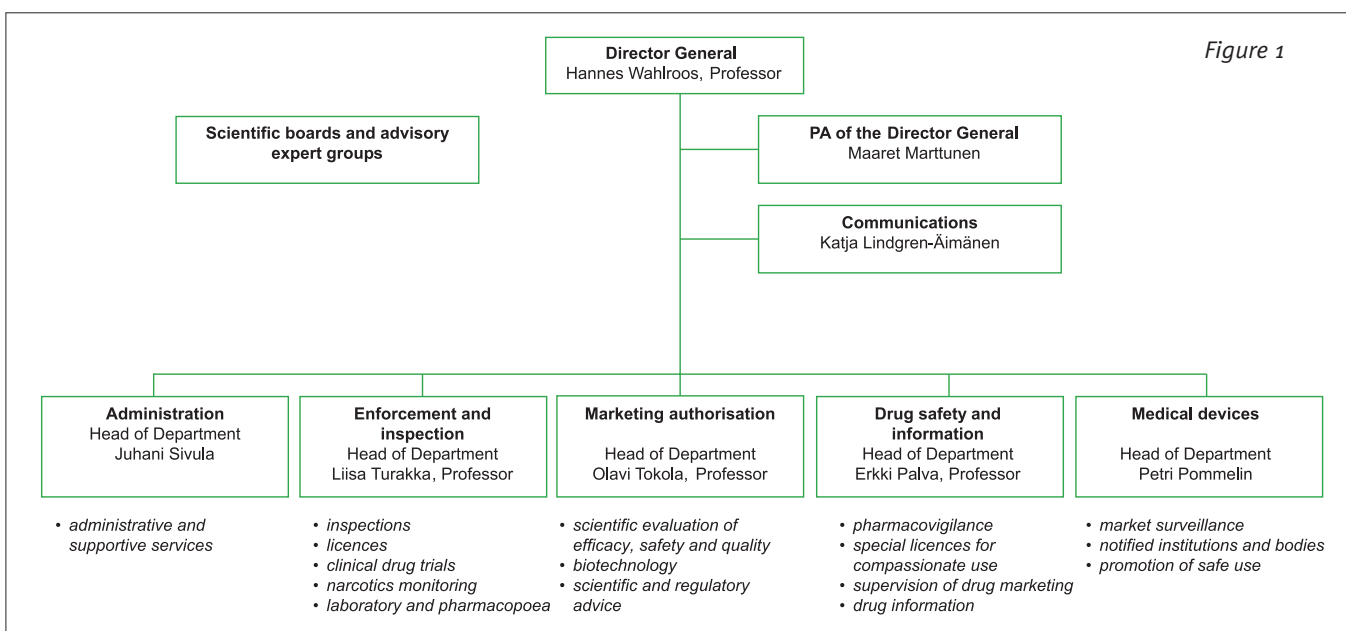
increased resources and new premises are the final touches to the reorganisation, in which the new specialised units with their individual teams concentrate on marketing authorisation procedures.

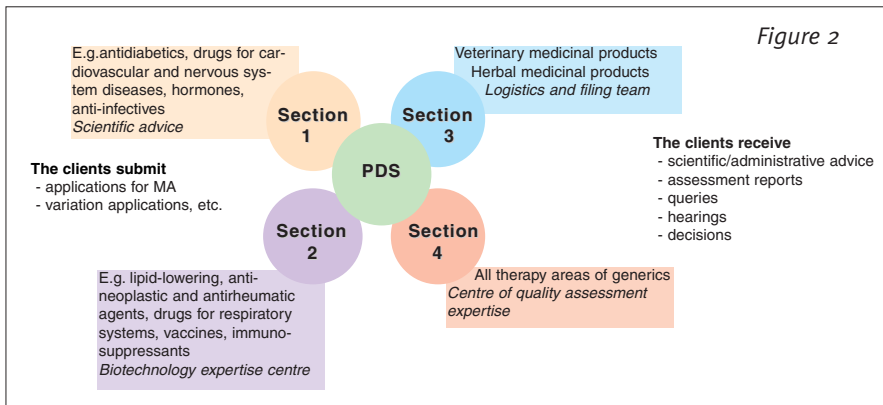
The new organisation in force since 1.1.2003 is shown in Figure 1. The reorganisation of the marketing authorisation procedures was the most extensive one of them all: three units in the line organisation were abolished and replaced by one department accountable for marketing authorisations. The operations of the department were designed in accordance with process organisation, with emphasis on the strategic aims, on the quality of the operations and good customer service.

The Department for Marketing Authorisations consists of four sections dealing with the authorisations and one section dealing with process development and support. The strength of the Department amounts to 62 persons. The customers are

the users and prescribers of pharmaceutical products, and those responsible for the treatment of domestic animals. The medicinal products are evaluated for their efficacy, safety, and quality. The new process-based organisation was established to better respond to the direct external client relationships, i.e., those comprising the marketing authorisation applicants and holders.

The clients of sections 1 and 2 consist of innovative pharmaceutical companies, whereas the clientele of section 3 includes innovative veterinary pharmaceutical companies and entrepreneurs within the veterinary and herbal medicinal product industries. Section 3 also includes a logistics and filing team serving the entire Department and ensuring the correct location of the documents. The clients of section 4 consist of representatives of the generic pharmaceutical industry.





Co-operation with the interest groups is emphasised in the operations of the Section Process Development and Support (PDS). Clients of all the sections also include EMEA and the Commission.

Figure 2 shows the operations and role of Sections with centres of scientific advice, biotechnology, logistics and filing, and quality assessment.

### Responsibilities and quality assurance

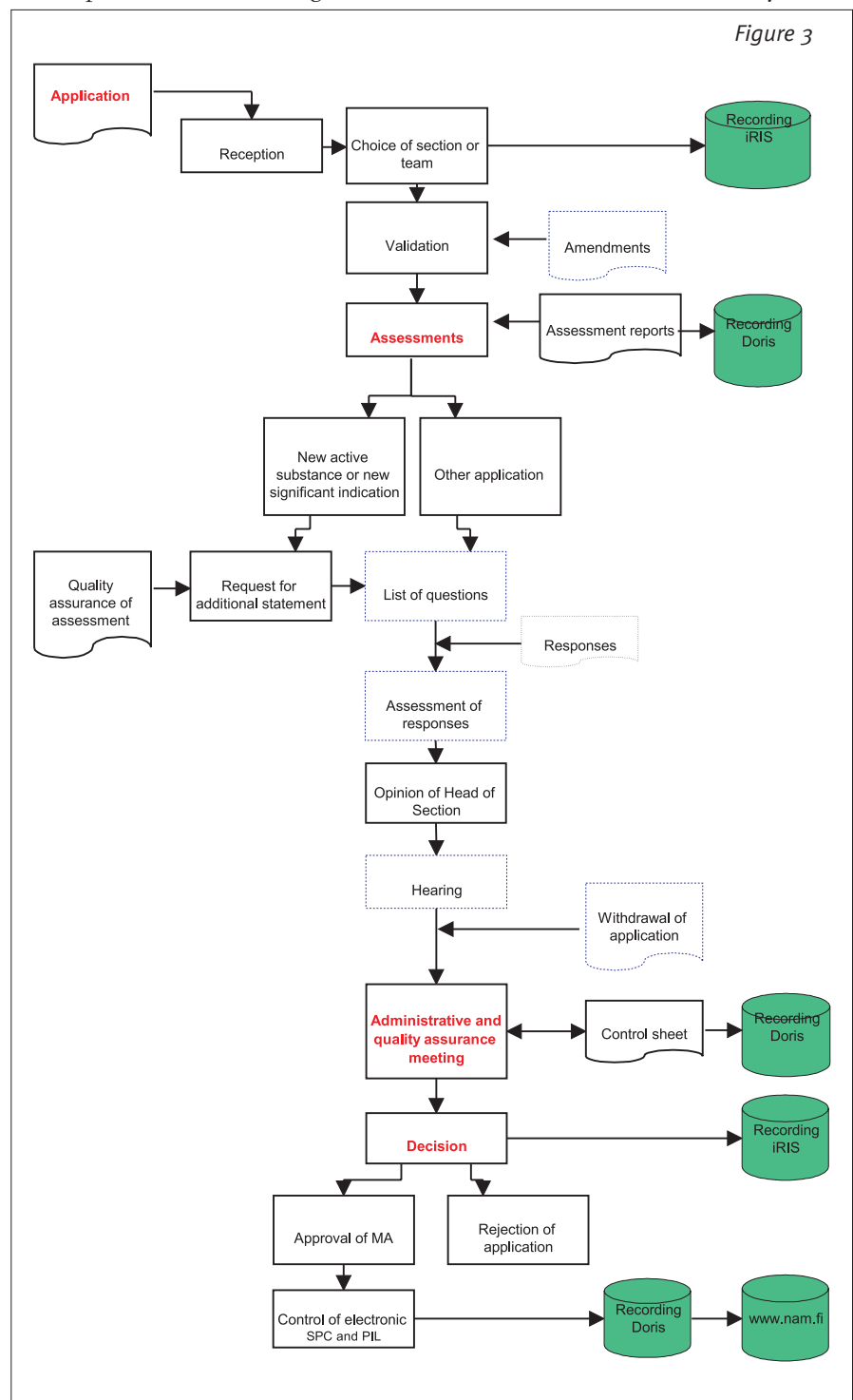
The Head of the Department for Marketing Authorisations shoulders the overall responsibility, as well as the responsibility for the performance and identification of the targets of the organisation. It is his task to ensure the correct prerequisites for work, encourages people in their tasks and in accepting new challenges; and together with other members of staff he also deals with issues associated with various interest groups.

The Heads of Sections are accountable for the procedures of their own sections. They ensure the proper management of their sections, reliable deliveries, performance, quality and maintenance of expertise. Good and correct use of resources and proper guidance for the experts are part of the quality aspects of management. The Head of Process Development and Support is the development and quality manager of the Department. Her responsibilities include the quality and promotion of procedures in the working practices of the sections and client contacts. The monitoring of the marketing procedures in the EU, and their implementation in Finland, as well as the promotion of the use of IT

applications, are also part of her responsibilities. The Head of Process Development is also in charge of

parallel import authorisations, export certificates, and exemptions from annual fees.

The simplified flow of processing on marketing authorisation application is shown in Figure 3. Each Head of Section is responsible for the quality, consistency and verification of evaluations before the meeting at which the decision is prepared. Quality assurance of the contents, for example, is required especially for new medicinal substances or significant novel indications or in connection with a major objection to an assessment submitted by an-





other member state. A second opinion, or a referee type of statement in this instance, can be obtained from a member of the Committee on Safety, Efficacy and Quality of Medicines, or from a permanent expert or the expert group of the Finnish Agency.

A co-ordinated administrative quality assurance meeting is a control point before the decision of a marketing authorisation is made, ensures that overall quality measures have been taken, the considerations and conclusions fulfilled and documented. The meeting is chaired by the Head of the Department for Marketing Authorisations and the participants include the marketing authorisation co-ordinators, the Head of Process Development and Support, the Project Manager, Head of Section 4 and the Head of Safety and Drug Information.

The Director General makes the decisions on new applications for marketing authorisations, renewal applications in cases where the application is presented to be rejected, and on the variations of prescription status. The Head of the Department for Marketing Authorisations determines the extensions of indications, and variations.

The Heads of Sections decide the renewals of marketing authorisations, variations on summaries of product characteristics (SPCs) and package information leaflets (PILs), comments made by Finland in mutual recognition procedures with regard to new active substances, new combinations or major objections,

and transfers of marketing authorisations to new holders. The Head of Section 4 in addition makes decisions regarding variations concerning quality.

### **Improved customer service**

The new organisation and new lines of action, with their focus on clients and procedures, result in an overall control of issues associated with marketing authorisations. Consistency is also achieved in the decisions made in the various procedures for marketing authorisations: all applications related to certain therapy area are evaluated by one and the same team. The multiprofessional teams of the different sections form an ideal base for development in the maintenance and distribution of expertise.

### **Where is the quality of work recognised?**

Simply in two respects: reliable deliveries and predictability, i.e. a good application will have the expected outcome.

With genuine collaboration and fairness the Department for Marketing Authorisations will become a happy and capable working unit. This should also be apparent in an improved ability to cope with the work and additionally improved customer services for applicants and holders of marketing authorisations.

# Summary

**Tapani Vuola**

SENIOR MEDICAL OFFICER

**Leena Sommarberg**

RESEARCHER

Safety&Drug Information  
National Agency for Medicines

**ADR News**

## Adverse reactions in the eyes reported in Finland

Drugs can cause adverse reactions in the eyes in many ways, without the mechanism of the adverse reaction being always fully understood. Drugs administered in the eyes may, understandably, cause topical irritation and allergic reactions, but systemically administered drugs may also affect the eyes in many ways. In addition to allergic reactions, adverse reactions in the eyes concern for example increased intraocular pressure, intraocular haemorrhage and other vascular disorders such as thromboembolism and toxic effects on the retina and on the optic nerve, as well as lens opacity.

### Reported adverse ocular reactions

During its existence, i.e. ever since 1973, the National Agency for Medicines in Finland has received over 600 reports on suspected adverse ocular reactions. These comprise about 3% of all reports received.

An individual report may even have included other adverse reactions or symptoms without the effects on the eyes being necessarily the primary effects. A single report may contain several drugs.

Approximately 20% of all cases, have been classified as serious.

### Eye irritation

The definitive majority of reports have been associated with diverse symptoms of irritation of the surface of the eye of varying severity, such

as stinging, a sensation of a foreign body in, or dryness of, the eye, or increased lacrimation. Consequently, as many as 200 adverse reactions have been reported as conjunctivitis.

The above symptoms can have been mainly caused by beta-blockers, with emphasis on the beginning of the adverse reaction register (136 reports, 81 of which were associated with the use of non-selective beta-blockers). In recent years, eye symptoms caused by cardiovascular agents have hardly been reported, whereas for example 11 reports have been made on statins with associated visual disorders. Five reports in the group of statins were associated with the use of atorvastatin.

Some of the reported symptoms of eye irritation are explained by allergic reactions of varying degrees. For example, skin rash, pruritus and dyspnoea have been reported at the same time. These types of reactions occur predominantly in the group of drugs administered in the eye (21 reports). Also in six cases the use of X-ray contrast media was found to be associated with a distinct generalised allergic reaction.

### Abnormal vision

A total of 135 reports have been of various cases of abnormal vision. Some of these have included conjunctivitis or other eye symptoms. This symptom has been caused by a varied group of drugs. The drugs most frequently reported expectedly include ethambutol, an anti-tuberculous drug, and, in a few cases, hor-

monal contraceptives (7), rofecoxib (4), and three reports of each of telithromycin, cefaclor and citalopram. Adverse reactions in the eye have been referred to in the summary of product characteristics of rofecoxib, telithromycin and citalopram, but not that of cefaclor.

### Visual field defect

Visual field defect was the cause of a report on 52 occasions. Nearly all of these were associated with the use of vigabatrin. Optic neuritis or neuropathy has been mentioned in the register 29 times. The drug most commonly suspected is ethambutol, and there have been some cases suspected of being caused by the use of amiodarone. Keratitis has been reported on 19 occasions mainly in the 1970s and 1980s. There are 17 reports of double vision/diplopia. The only distinct drug in the group is zolpidem (3 reports of diplopia), the use of which has also been associated with reported cases of visual hallucinations, and, in two individual cases also accommodation or other visual disorder. The risks of diplopia and hallucinations are also mentioned in the summary of product characteristics. Keratic opacities were reported on 9 occasions with amiodarone as the main culprit again (7 cases). Another suspected drug was chlorpromazine, however, in association with aciclovir in one report.

## Cataract and glaucoma

Cataract has been reported in 12 cases. In three cases the suspected drug was the steroid. Glaucoma was reported on 10 occasions, but no drug was particularly predominant in such a small group, even though various antidepressants are used widely, and even though warnings are issued of this adverse effect associated with these drugs. Isolated cases associated with new antidepressants have been reported in the literature.

## Blindness and colour blindness

The most serious adverse reaction occurring in the eye is blindness, which has been reported 5 times. In two of the cases the reported drug was quinine, one of the known adverse reactions of which is, in fact, blindness. Consequently, a preparation containing quinine was in 2002 withdrawn from over-the-counter status. One of the cases of blindness occurred during thrombolytic treatment as a result of ocular haemorrhage, one case included the use of ethambutol (see below) and one included practolol, the use of which was associated with conjunctivitis and followed by severe keratitis.

Colour blindness was reported on four occasions, again with ethambutol being the main culprit in all the cases. Colour blindness is often one of the first symptoms of ophthalmic nerve damage. Harmless and temporary change of colour vision probably caused by sildenafil was only reported once.

## Drugs with a potentially harmful effect on the eye

Beta-blockers have been discussed above, their biggest harmful effect being dryness of, and sensations of irritation in, the eye. After this group, the second largest group with associated suspected adverse reactions is the anti-mycobacterials with 42 reported cases. Thirty-seven of them involved ethambutol, which has also been suspected of having caused various types of damage to the optic nerve, such as optic nerve inflammation, retrobulbar neuritis, optic atrophy, colour blindness and blindness once. In some cases only visual disorders in general have been reported. Other anti-tuberculous drugs are not to be found more often than in a few isolated cases.

Adverse reactions on the eye associated with the antiarrhythmic amiodarone have been reported on nine occasions, the majority of which involved keratinic deposits, but also three cases of keratitis and one case of keratic opacity. Corneal changes are a result of accumulation of amiodarone on the cornea. Damage to the optic nerve has been reported 3 times. In the summary of product characteristics full examination of the eyes is advised in case obscuration of the vision or visual impairment occurs.

Various quinine derivatives are known for their potentially harmful effects on the eye. Three cases of blindness from the use of quinine combination were reported in the 1980s. One of these, however, was reported as having been temporary. Chloroquin, an anti-malarial drug in Finland, has been reported 5 times, three of which reports involved ker-

atic opacity, one a suspected case involving precipitation and one macular degeneration. No adverse effects on the eye have been reported with the use of mefloquine.

Adverse reactions with effects on the eyes caused by vigabatrin have also been reported in Finland, about fifty times. Except in a couple of cases: its best known adverse reactions involves certain types of visual field defect.

## Conclusion

In the Finnish ADR register, adverse reactions on the eyes form about 3% of all the reports. The majority of them are harmless symptoms of irritation of the surface layers of the eye or temporary visual disturbances. Some drugs may nevertheless harm the optic nerve and even cause permanent blindness. Even though permanent adverse reactions on the eyes are rare, their potentiality should be borne in mind in the use of drugs.

Translation

Mervi Moisander