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## **Orthopaedics – Latest Developments and Trends, Emphasising on the Special Problems of Poor, Non-Industrialised Countries**

Predictions about the future of orthopaedics made in the past never became reality. Adolf Lorenz, for example, forecast a “world without cripples” in his book “Ich durfte helfen” in 1937 – a vision that has never come true. Also fiction utopias, such as “Brave New World” by Aldous Huxley (1932) or “1984” by George Orwell (1949) remained visions. Even Frances Fukuyama’s “Our Posthuman Future” will most probably not reflect our future reality.

What are the obvious trends in orthopaedics?

On the one hand there is the gradual shift towards new specialisations and sub-specialisation in the field of orthopaedics, and on the other hand the dynamics of globalisation becomes apparent in the industry. There are only five major orthopaedics companies left, which is clearly to be seen in the case of Stryker Howmedica. Pharmaceuticals companies like Pharmacia and Pfizer are merging. Bioengineering of bones and joints has invaded clinical day-to-day business. One of the biggest threats, however, hanging above businesses like the sword of Damocles, are product liability suits, resulting in risk prevention largely dominating decision-making processes.

On the 30<sup>th</sup> of November 1999 Kofi Annan, the Secretary General of the United Nations officially announced the UN’s support for the Bone & Joint Decade. This initiative is supposed to raise public awareness for the problem of bone and joint injuries.

Forty percent of women above 50 are suffering from osteoporosis. In the United States 1.3 million patients with a total of 500,000 vertebral fractures are treated every year. In Germany there are 100,000 cases of femoral neck fractures a year. One third of these patients die within the first six months after treatment, a mortality rate that corresponds to the one of breast cancer. An interesting fact is also that the prevalence of knee injuries in people over 65 is twice as high as the prevalence of all other joint injuries taken together. The hand ranks second in terms of prevalence, third are shoulders and only fourth are hips.

Arthrosis is the fourth most frequent illness with women and the eight most frequent with men. It is the most important illness with regard to the quality of life and it is also the most frequent reason why people see a doctor. Moreover Arthrosis is the fourth most frequent illness leading to hospitalisation, the fourth most frequent in terms of surgical operations and the most frequent when it comes to out-patient surgery. Sadly enough these facts are not reflected in the curricula of medical schools and are not taken account of in the allocation of research funds.

The ratio of people living in rural and urban areas also provide us with interesting figures. In 1955, for example, 68% of the population were still living in the countryside, whereas in 1995 the percentage had gone down to 55. According to predictions for 2025 only 41% will live in rural areas any more and the remaining 59% will be living in urban conglomerates. This development will certainly confront us with corresponding health-related and socio-political challenges.

There will be an increase in bone and joint injuries due to a higher life expectancy, more demanding quality of life, urban society and leisure society. This raises the need for orthopaedic treatment. At the same time, however, the number of accidents in the third world will go up and lead to more “clients” for bone and joint medicine.

Training and specialisation:

Generally it must be noticed that US orthopaedic surgery is dominating around the world. Of 20 high-impact journals on orthopaedics only 3 are of non-US origin. The American Academy of Orthopaedic Surgeons and the American Orthopaedic Association are setting the standards and guidelines for good clinical practice. The European Federation of Orthopaedic and Trauma Surgery (EFORT) is gradually forming a European counterweight to this American dominance, bringing together a great number of orthopaedic surgeons, representing more than 600 million people.

In terms of specialisations in orthopaedics hand surgery covers the biggest share of the field with 23.7%, followed by sports medicine with 21.2% and spine surgery with 13.4%. Sub-specialisation is booming among young physicians, whereas the percentage of the so-called general orthopaedic surgeons, usually aged 50 and older, is shrinking.

This trend for specialisation can be traced back to the explosion of knowledge, the strive for additional knowledge, the permanent pressure exerted by lawsuits, economic reasons, the pressure for survival on the orthopaedic market and the pressure exerted by insurers and legal provisions. Teaching hospitals in the United States, Latin America and Australia often offer the full range of sub-specialisations, whereas in Europe and Asia teaching hospitals frequently offer only one or two sub-specialisations. The percentage of teaching hospitals with fundamental research labs, units for follow-up examinations and industrial foundations is highest in the United States and diminishes from Canada and Australia via Europe to developing countries, where only 50% of teaching hospitals (e.g. in Southern Africa or Latin America) can offer such facilities. In Nigeria, the share is as low as 20%.

If we believe the predictions of Frances Fukuyama in “Our Posthuman Future” and “End of History” the average life expectancy of people living today will rise to over 100 years and as a consequence of the ageing population in the first world there will be a surge of bone and joint injuries, such as Osteoporosis and hip fractures. The third world, however, will suffer greatly from the increasing number of accidents and their repercussions. Modern medicine nowadays offers almost unlimited possibilities, but there is a danger that health expenditure surges to unaffordable dimensions, perhaps generating three-tier medicine.