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Health Technology Assessment and Comparative Effectiveness in Sweden

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Introduction

The collection of comparative effectiveness data and Health Technology Assessment (HTA) has been practiced for decades, particularly in Europe. Indeed, efforts to use some kind of evidence to guide health-care practices in Sweden were first documented 350 years ago upon the establishment of the Medical Collegium in 1663, whose tasks were to distinguish quackery from medicine, to develop a pharmacopeia, and to control the trade of poisonous drugs. The Collegium required yearly reports from district physicians in which they were urged to describe the disease profiles of local areas that included information on the available drugs and their use, the level of medical treatment, and crude treatment outcomes such as improved or deceased, as well as information about the lifestyles of the population, nutrition, housing conditions, levels of alcoholism, and literacy. Subsequently, assessment of health practices have steadily evolved in Sweden's health-care agencies and institutions. Today, Sweden has a wide ranging assessment system, in which the concept of comparative effectiveness is included in a national HTA and drug approval process, although there are not many "true comparative effectiveness" results (e.g., head to head trials) available in the literature so far.

HTA

HTA was created in the 1970s when the computerized tomography (CT) scanner was introduced. Policymakers felt they needed more evidence than promises of the new technology and called upon the scientific community to provide synthesized information about its clinical, economic, social, ethical, and budget impact implications. That multidisciplinary and policy oriented approach was then called medical technology assessment, later named HTA.

Not surprisingly, HTA today is much different from then, covering the whole health-care spectrum. As such, HTA includes drugs, devices and equipment, and the medical, surgical, and other procedures used in prevention, diagnosis treatment and rehabilitation of disease and disability. The methodologies have improved tremendously over the years, and nowadays, there are more than 50 HTA agencies around the world and thousands of academics employed in the HTA field. Indeed, the growth of this field saw an international HTA society, The International Society for Health Technology Assessment established in 1985, as well as the publication of the first issue of the International Journal of Technology Assessment in Healthcare (IJTAHC). Today, the society has reformed under Health Technology Assessment International and has about 1000 members. The Journal has a quarterly distribution of 4000. Over the years, IJTAHC has published about 2000 manuscripts authored by about 5000 scholars, describing assessments of different health practices and technologies. Despite the growth of expertise in the field and indications that HTA could substantially benefit from attention being paid to the issue of comparing the effectiveness of different technologies, many agencies, institutions, departments, and pharmaceutical companies continue to focus their search for evidence of the effectiveness of one drug, one device, or one other piece of technology, in isolation.

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HTA in Sweden

In the early 1980s, the government of Sweden initiated discussions around the need to establish an agency to review all health-care practices and technologies in use in the country. Within a few years, an HTA agency known as the Swedish Council on Technology Assessment in Healthcare (SBU) was established. Of note, and perhaps integral to its success, multiple stakeholders were involved in the formation of SBU, including researchers in clinical medicine and health services research, particularly health economists, policymakers and individuals with political influence. Indeed, the Minister of Finance personally attended many of the discussions and, as in the UK, the focus was not to save money, but to make more effective use of existing resources and improve the quality of care by giving people access to new, effective technology as soon as possible. Another important objective for Sweden was to obtain reliable information in order to set health-care priorities.

Processes

Although the concept of comparative effectiveness had not yet been coined, it was clearly stated by the Minister of Health that the newly formed SBU should give priority to assessing major disease areas and simultaneously evaluate and compare the effectiveness of all technologies used for prevention, diagnosis, and treatment. The first disease area to be considered by SBU was diagnosing and treatment of unspecific neck and low back pain, followed by hypertension, obesity, depression, and dementia.

As with most HTA organizations, the SBU assessment process includes a systematic review of the scientific literature that identifies all available technologies; a context-specific cost-effectiveness analysis; a review of the ethical and social issues; and development of policy options and implications. The reviews are conducted by a team of 10 to15 individuals, generally having research backgrounds. Each review is quite time consuming as it may require consideration of as many as 50 technologies. For

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example, the SBU identified more than 20,000 studies in its assessment of unspecific neck and low back pain. More than 600 of these, describing 40 different technologies used in prevention, diagnosis, and treatment were used to form conclusions about the relative, or comparative effectiveness in this area. Of note, the deliberate involvement of those affected by the findings has ensured a strong connection between SBU and clinicians throughout the country.

Assessment Results

Disease Area: Alcohol and Drug Abuse

SBU completed this review in 2004. They concluded that there was clear evidence of effectiveness for essentially all drugs used in the treatment of alcohol and drug abuse but found a considerable amount of evidence that drug therapy is significantly underused as a technology in this disease area.

Disease Area: Unspecific Low Back Pain

Despite a large fraction of the capacity of magnetic resonance imaging and CT scanning being taken up by patients with unspecific, low back pain, upon assessing 13 different diagnostic technologies used in diagnosing this condition (Table 1), SBU found that only one intervention, namely physical examination, is supported by strong evidence that it is a useful diagnostic measure. Similarly, despite a long list of potential treatments, many have been proven ineffective (Table 2).

Disease Area: Obesity

Importantly, in addition to identifying the evidence for or against diagnostics and treatments, SBU assessments draw attention to the relative benefits of specific interventions. For example, the use of pharmacotherapy for obesity may significantly reduce weight, but only by a relatively small amount per year. This has led to a tendency for many people to disregard it as a useful intervention. Although surgery was shown being the option with best evidence of sustainable weight loss and positive impact on final end outcomes, the review demonstrates that pharmaceuticals do much better than many other interventions (Table 3).

Concluding Remarks

After more than 20 years of intensive work on evidence based medicine, and HTA at both the national (SBU) and the local level (the 25 regions/county councils), along with substantially strengthened mechanisms for assessment of pharmaceuticals through the TLV (the Dental and Pharmaceutical Benefits Board, which not only makes national pricing and reimbursement decisions, but also extensive assessments in the field of health technologies, Sweden now has quite some experience in approaching the coming era of comparative effectiveness (as launched in the US) and relative effectiveness (as launched by the European Commission).

Table 1 Technologies used to diagnose unspecific low back pain

Physical examination	Facet blocks
Mobility and muscle tests	Stress radiography
X-ray	Discography
Magnetic resonance imaging	Nerve root infiltration
Computed tomography scanning	Bone scintigraphy
Neurophysiologic tests including electromyography (EMG)	Thermography
	Ultrasound

Table 2 Comparative effectiveness in treatment of nonspecific low back pain

	Acute	Chronic
Rest or bed rest	Strong evidence against	Strong evidence against
Traction	No evidence	Moderate evidence against
Antidepressants	No evidence	Moderate evidence against
Biofeedback	Unknown	Moderate evidence against
Epidural steroid injection	No evidence	Unknown
No nerve root pain	No evidence	No evidence
Cold	No evidence	No evidence
Heat	No evidence	No evidence
Injection into trigger points	No evidence	No evidence
Injection into ligaments	No evidence	No evidence
Massage	No evidence	No evidence
Shortwave diathermy	No evidence	No evidence
Ultrasound	No evidence	Limited evidence
Acupuncture	No evidence	Limited evidence
Corsets	Strong evidence for	Strong evidence for
Back exercises	Strong evidence for	Strong evidence for

Table 3 Treatments used in obesity

Dietary counseling	Behavior therapy
Very low calorie diet	Physical exercise
Carbohydrate-rich diets	Surgery
Protein rich diets	Acupuncture
Lactovegetarian diets	Aromatherapy
Dietary fiber supplements	Caffeine
Starvation	Hypnosis
Cromium	Pharmacotherapy
Vinegar	

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