

# Development and Implementation of Clinical Practice Guidelines: Current Status in Korea

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Documentation of unexplained geographic variations in medical practices and use of inappropriate interventions has led to the proliferation of clinical practice guidelines. With increased enthusiasm for guidelines, evidence exists that clinical practice guidelines often influence clinical practices or health outcomes. Their successful implementation may improve the quality of care by decreasing in appropriate variation and expediting the application of effective advances to healthcare practices. In Korea, physicians and healthcare professionals have begun to take interests in clinical practice guidelines. Currently, over 50 practice guidelines have been developed through professional academic organizations or via other routes; however, the quality of the guidelines is unsatisfactory, implementation in clinical settings is incomplete, and there is insufficient infrastructure to develop clinical practice guidelines. Korea must develop policies and invest resources to enhance the development and implementation of clinical practice guidelines.

**Key Words:** Clinical Practice Guidelines; Evidence-Based Medicine; Healthcare Quality; Health Policy; Clinical Practice Guideline Development; Korea

## INTRODUCTION

Clinical practice guidelines can be defined as, “systematically developed statements to assist practitioners and patient decisions about appropriate healthcare for specific circumstances” (1). The purpose of clinical practice guidelines is to provide assistance for decision-making between practitioners and patients under healthcare (2). Clinical practice guidelines are developed to improve the quality of care by providing scientific information for decision-making and by providing a description of details for appropriate practices.

The backgrounds from which clinical practice guidelines are emerging are as follows:

- 1) There is increasing uncertainty about the effectiveness of new medical technologies that are rapidly implemented in clinical practice.
- 2) Variations in the medical practices such as surgery rate, admission rate, and medication dosage rate are unexplained; however, there is insufficient scientific evidence to reconcile these variations.
- 3) Regarding healthcare spending, the need to induce proper behavior by healthcare providers is emerging because decisions by physicians have considerable discretion.

Clinical practice guidelines inform physicians on beneficial types of intervention and effective treatment methods versus those that are dangerous or ineffective treatments. In addition,

by presenting various alternatives in patient management, they summarize the pros and cons, offer possible consequences in an objective manner, and provide physicians with the latest information through clearly stated recommendations. This can help prompt confidence in physicians and their choice of treatment. Furthermore, clinical practice guidelines can assist physicians as well as patients by providing information on the best treatments that enables them to make informed decisions and improve treatment compliance.

Clinical practice guidelines are considered effective tools to shorten the gap between practitioners' medical care and scientific evidence. During the past several decades, the global development and implementation of clinical practice guidelines to improve the quality of medical care has increased (3).

The purpose this article was to investigate current status of development and implementation of clinical practice guideline in Korea.

## CLINICAL PRACTICE GUIDELINES IN GENERAL

### Effects on healthcare practice

Though some studies do not show the positive relationships, many previous studies on clinical practice guidelines show that clinical practice guidelines can provide effective methods to change the process of healthcare services and contribute to improving healthcare outcomes (4). Existing study results of the

cases in which clinical practice guidelines was effective in the healthcare process and treatment results are as follows:

1) Many previous studies examined whether clinical practice guidelines contribute to promoting appropriate medical care. The majority of studies suggest clinical practice guidelines have a positive effect. A survey by the American College of Physicians (ACP) showed that 60% of the members felt that clinical practice guidelines had positive effects on decisions by physicians (5). In another example, the study on the effectiveness of guidelines for upper respiratory infection treatments showed that clinical practice guideline-driven treatment reduced the dosage of antibiotics, while the symptom reduction times of the test and control groups were similar (6).

The results of evaluation of the effectiveness of clinical practice guidelines for treating cystitis have shown that the urinalysis rate, urine culture rate, number of hospital visits of the patients subjected to clinical practice guidelines were reduced, and the dosage rate of antibiotics recommended by clinical practice guidelines were increased (7).

2) The effects of clinical practice guidelines differ with the participation level of physicians and the contents of clinical practice guidelines (8).

a. The physicians who participated in developing clinical practice guidelines tend to abide by clinical practice guidelines more than colleagues who did not participate.

b. Specific clinical practice guidelines influence the behavior of physicians more than non-specific clinical practice guidelines.

3) The effectiveness of clinical practice guidelines can differ by the policies and environment of the hospitals at which the physicians work. When an institution initiates a hospital-wide program that evaluates physician performance based on guidelines and recommends the use of clinical practice, physicians often resorted to the use of clinical practice guidelines in actual practice.

4) Implementation of clinical practice guidelines resulted in reduced medical care costs as well as improved health outcomes. Based on a study on the economic benefits of clinical practice guidelines for stroke patients, patients who were treated according to clinical practice guidelines incurred lower treatment costs than others and a tangible reduction in the use of hospital resources. The patients treated with the clinical practice guidelines had improved life expectancy and the degree of disability was less severe.

5) The result is that clinical practice guidelines benefit doctors, patients, and clinical researchers. Clinical practice guidelines improve the quality of medical decisions during treatment and, clinical practice guidelines facilitate the improvement of health outcomes through the promotion of proven

and effective treatments and the avoidance of ineffective treatments.

### Methods of development

Clinical practice guidelines emerged about one hundred years ago and were first based on the personal testimonies and opinions of at individual hospitals. The documentation of these testimonies and opinions formed the prototypes of the current guidelines. The two main approaches to creating Clinical Practice Guidelines are the consensus-based approach and the evidence-based approach. Until the 1980s, the consensus-based approach was used more often and was based on experts discussing and debating particular topics, through which treatment recommendations would be derived. However, this approach often included recommendations with unproven effectiveness because the experts included the preferred treatment methods they were personally accustomed to. Accordingly, there are weaknesses stemming from the arbitrary recommendations, difficulty in propagation and potential controversial topics with questionable validity.

The evidence-based approach developed parallel to evidence-based medicine and was highly endorsed since it addressed the weaknesses of the consensus-based approach (9). With the evidence based approach, literature could be systematically searched through literature-search software that helped to eliminate the flaws of evidence selection (10). In addition, with meta-analyses becoming more common, the methods for grading evidence becoming formalized and influential archives such as the Cochrane database being established, the evidence-based approach gained more credibility and its recommendations became more convincing. Currently, the evidence-based approach is dominant because the advantages of a comprehensive literature selection, evaluation, and recommendation derivation (11).

### Activities in developed countries

In Europe and North America, the development and implementation of clinical practice guidelines were initiated two decades ago and are still actively pursued. Thus, the experience of these regions provide valuable lessons. The important elements that appear in the policies of the European and North American countries regarding clinical practice guidelines are as follows (12):

- The development of clinical practice guidelines are connected to policies of that improve the quality of healthcare.
- An evidence based approach is used to develop most clinical practice guidelines.
- Development of clinical practice guidelines is tightly linked to implementation and dissemination strategies.

In these nations, significant effort is put into the development of clinical practice guidelines as well as implementation and dissemination (13). These implementation and dissemination strategies include publishing educational literature, conducting

**Table 1.** Guideline agencies in several countries

Country	Name of organization	Type of organization	Web site
Australia	National Health and Medical Research Council (NHMRC)	National government	www.health.gov.au/nhmrc
Canada	Canadian Medical Association (CMA Infobase) Centres for Health Evidence (CHE)	Professional	www.cche.net
Scotland	Scottish Intercollegiate Guidelines Network (SIGN)	Professional	www.sign.ac.uk
England	National Institute for Health and Clinical Excellence (NICE)	Professional	www.nice.org.uk
France	HAS (Haute Autorite De Sante)	National government	www.has-sante.fr
Germany	AEZQ/AQuMed Guideline Link Collection (AGLC)	National government	www.leitlinien.de
Netherlands	Dutch Institute for Healthcare Improvement (CBO)	Professional	www.cbo.nl
New Zealand	New Zealand Guideline Group (NZGG)	National but not government	www.nzgg.org.nz
United States	US Preventive Services Task Force (USPSTF)	National government	www.uspreventiveservicestaskforce.org
Singapore	Singapore Clinical Practice Guidelines	National government	www.moh.gov.sg
Japan	Japan Council for Quality Healthcare (JCQHC)	National semi government	http://minds.jcqhc.or.jp

conferences, holding discussions among clinical opinion leaders, and developing reminder systems (14). Audits and financial incentives are also included.

In order to do this, developed nations have set up national organizations or programs for clinical practice guidelines (Table 1).

These clinical practice guideline programs have standards for the quality of clinical practice guidelines; in addition, guideline clearing houses have been built for the purpose of their dissemination (15).

## CURRENT STATUS OF CLINICAL PRACTICE GUIDELINES IN KOREA

In Korea, physicians, healthcare professionals, and policy makers have had recent and increased interest in clinical practice guidelines and have initiated discussions within the healthcare community. Currently, about 70 clinical practice guidelines have been developed through professional academic organizations (Table 2) (16).

### Characteristics of Korean clinical practice guidelines

We have analyzed 52 guidelines included in the clinical practice information system. The average development time for a clinical practice guideline is 7-12 months and the professionals involved in clinical practice guideline development were mostly physicians of one specialty within the same medical field. Multi-disciplinary groups of practitioners involved in clinical practice guideline development are relatively rare. Of the development methods, the adaptation of foreign guidelines were the most common (23.1%), followed by consensus among specialists (19.2%), and then by evidence based methods (15.4%); in addition, the combination of these methods was also common (21.2%). The cost of developing clinical practice guidelines came from the internal budgets of academic organizations, with development amounts ranging from \$10,000 and \$30,000. Over 50% of academic organizations either plan to or have gone through revisions (17) (Table 3).

Through assessing the quality of guidelines using the AGREE

method, the average score of the six domains were between 50 to 70 points and was relatively low compared to other nations.

### Dissemination and implementation of clinical practice guidelines

The dissemination methods for clinical practice guidelines are mainly in forms of printed material (28.0%) or presentations at academic proceedings (22.7%), and other methods of dissemination include dissemination at academic proceedings. A total of 32.7% of academic associations claimed to have a planned budget to disseminate clinical practice guidelines; however, over 67% did not have a separate budget for dissemination.

The awareness and implementation of guidelines among physicians was not high (18). In regards to the clinical practice guidelines for the treatment of childhood asthma, less than 20% attended the educational course for clinical practice guidelines and about 20% examined the use of clinical practice guidelines. A total of 70% of the pediatricians were aware of the clinical practice guidelines; however, only a small portion of them actually used the guidelines. Conducting educational training for guidelines was infrequent. In a survey of pediatricians, the lack of promotion and training on clinical practice guidelines were pointed out as necessary.

### Problems in developing clinical practice guidelines in Korea

The problems in developing clinical practice guidelines are as follows:

- There is a lack of interdisciplinary approaches to develop clinical practice guidelines.
- There is an intention to use an evidence based approach; however, guidelines that detail rigorous evidence based approaches are scarce.
- They want reflect the situations in Korea; however, it is not possible due to insufficient domestic research.
- Recommendations are made through a consensus of experts with an unclear connection between recommendations and evidence.
- Within development groups, there were limited methodol-

**Table 2.** Korean clinical practice guideline by subjects

Category	Guideline subjects	Academic societies who published guideline
Gastrointestinal system	Diagnostic endoscopy	The Korean Society of Gastrointestinal Endoscopy
	Therapeutic endoscopy	
	Intestinal tuberculosis	The Korean Society of Gastroenterology
	Behcet's enteritis	
	Ulcerative colitis Crohn's disease	
Liver	Chronic hepatitis B	The Korean Association for the Study of the Liver
	Chronic hepatitis C	
	Liver cirrhosis	
	Hepatocellular carcinoma	The Korean Liver Cancer Study
Respiratory system	Asthma	The Korean Academic of Tuberculosis and Respiratory Diseases
	Tuberculosis	
	Pneumonia	
	COPD	
	Lung cancer	Korean Association for the study of Lung Cancer
Neurology & psychiatry	Alzheimer's disease	Korean Association for Geriatric Psychiatry
	Bipolar disorder	Korean Neuropsychiatric Association
	Schizophrenia	
	Depressive disorder	
	Post traumatic stress syndrome	Korean Academy of Anxiety Disorder, Korean college of Neuropsychopharmacology
	Stroke	Korean Stroke Society
	Stroke rehabilitation	
	Facial nerve palsy	The Korean Otologic Society
Cardiovascular system	Hypertension	The Korean Society of Hypertension
Musculoskeletal system	Osteoporosis	The Korea Society of Bone Metabolism
	Nerve block	The Korea Pain Society
Genitourinary system	Impotence	Korean Society for Sexual Medicine and Andrology
	Bladder tumor	The Korean Urological Association
	Gynecologic cancer	The Korean Society of Gynecologic Oncology and Colposcopy
	Urinary tract infection	Korean Society of Pediatric Nephrology
	Dyslipidemia and impotence	The Korean Urological Association
	Benign prostate hyperplasia	The Korean Urological Association
	Kidney disease	The Korean Society of Nephrology
Endocrine system	Diabetes	Korean Diabetes Association
	Hormonal replacement therapy	Korean Society of Obstetrics and Gynecology
Infection	Vaccination	The Korean Pediatric Society
	Nosocomial infection	Korean Society for Nosocomial Infection Control
	Meningococcal meningitis	The Korean Society of Menopause
Oncology	Bladder tumor	The Korean Urological Association
	Gynecologic cancer	The Korean Society of Gynecologic Oncology and Colposcopy
	Cancer screening	Korean Medical Association
	Malignant pain control	Ministry of Health & Welfare
	Breast cancer	Korean Breast Cancer Society
Nephrology	Kidney disease	The Korean Society of Nephrology
Otolaryngology	Allergic	The Korean Academy of Asthma, Allergy and Clinical Immunology
	Sinusitis	The Korean Rhinologic Society
	Chronic otitis media	The Korean Otologic Society

Characteristics of Korean Clinical Practice Guidelines.

ogists with detailed techniques (19).

## ISSUES RELATED TO CLINICAL PRACTICE GUIDELINES IN KOREA

Issues regarding the development of implementation of guidelines in Korea can be summed up as:

### Concerns among the healthcare providers

Many physicians in Korea are critical of clinical practice guidelines. According to a survey more than 70% of physicians agreed

that CPG's intended to improve quality of healthcare and were helpful in making good clinical decisions and improving good educational tools. However, over 50% of physicians said that it decreased healthcare costs, lowered reimbursements to physicians, challenged the autonomy of physicians, and was too rigid to apply to individual patients (Table 4).

Their concerns can be summarized as guidelines that could possibly impede the creativity and diversity of practice, be used as an external evaluation and assessment tool, and be used against doctors as a basis for legal action.

Clinical practice guidelines will improve the quality of medi-

cal care and are critical tools to implement evidence-based medicine that can only be achieved through the active participation of the practitioners to develop and utilize clinical practice guidelines. In Korea, it is necessary for providers to properly recognize guidelines in order to further expand clinical practice guidelines (20). To stimulate the proper recognition of guidelines, there needs to be a mechanism to include the providers in the development of clinical practice guidelines and logistical support.

### Reflection of the situation in Korea and proliferation of domestic research

One of the missions in the development of clinical practice guidelines is to properly represent the Korean context. Reflecting the domestic situation includes understanding the epidemiological characteristics of a disease and properly assessing the effectiveness of interventions in Korea. However, we cannot represent

**Table 3.** General characteristics of clinical practice guidelines in Korea

Characteristics	No. (%)
Duration of development (mo)	
1-6	12 (23.1)
7-12	24 (46.2)
13-24	6 (11.5)
Over 25	6 (11.5)
Unknown	4 (7.7)
Cost of development (million USD)	
0.99	10 (19.2)
1-1.99	14 (26.9)
2	12 (23.1)
Unknown	16 (30.8)
Development methods	
Evidence based methods	8 (15.4)
Adaptation of foreign guidelines	12 (23.1)
Consensus among specialists	10 (19.2)
Mixed	11 (21.2)
Unknown	11 (21.2)
Number of involved specialists	
1	24 (46.2)
2	12 (23.1)
3	6 (11.5)
4	6 (11.5)
5	3 (5.8)
Unknown	1 (1.9)
Dissemination methods	
Sent out in printed forms	52 (100.0)
Sent out in CD forms	- (-)
Sent out through the internet	- (-)
Posted in journals	8 (15.4)
Presentations at academic proceedings	22 (42.3)
Clinical Practice Guidelines education training	10 (19.2)

**Table 4.** Korean physician's attitude for clinical practice guidelines

Characteristic	Agree	Disagree	Do not know
Intended to improve the quality of care	561 (78.8)	105 (14.8)	46 (6.5)
Helpful in making good clinical decisions	617 (86.7)	76 (10.7)	19 (2.7)
Helpful to improve good educational tools	615 (86.4)	83 (11.7)	14 (2.0)
Intended to decrease healthcare costs and lower reimbursements to physicians	418 (58.7)	207 (29.0)	87 (12.3)
A challenge to the autonomy of physicians	446 (62.6)	212 (29.8)	54 (7.6)
Too rigid to apply to individual patients and oversimplified	422 (59.2)	216 (30.4)	74 (10.4)

the situation in Korea because of insufficient clinical research and have to resort to data from other nations. Therefore, we need to proliferate domestic research to eliminate this problem.

While it is possible to conduct comprehensive literature searches for international literature using PubMed, Embase, and Cochrane Library databases, the search for domestic literature is difficult with an electronic database and in most cases physicians have to resort to a manual paper search. It is necessary to build a searchable database that effectively aids in a comprehensive search of the domestic literature.

### De novo development or adaptation of international guidelines

Since most data for guidelines are from international research, a question is raised on whether it is necessary to create de novo development or if we can adapt international guidelines that cost less time and money. It would make strategic sense to develop guidelines based on increased domestic research. However, there is a school of thought that makes a strong and valid argument on the effectiveness of the evaluation of the quality of internationally developed guidelines and the adaptation of good quality guidelines. When adapting international guidelines, it would be necessary to establish acceptance criteria on the required information and processes. It would also be necessary to define standards to establish priorities to determine whether to develop de novo or adapt international clinical practice guidelines (18).

### Government's policies and support

The investment of significant human and financial resources is required for the development of sound quality clinical practice guidelines. Currently, there exists insufficient infrastructure to develop clinical practice guidelines and investments are required to develop sound quality clinical practice guidelines. For this, the government must be instrumental and provide support for professional staff that can allocate an adequate budget to establish systematic clinical practice guideline programs. Korea needs to establish policies on how to develop, expand, and implement clinical practice guidelines. These policies require priorities to develop clinical practice guidelines (determined in concert by the medical community, insurance industry, and consumer groups), a system to evaluate the quality and effect of clinical practice guidelines, and support functions for the evaluation,

management, and propagation of diverse guidelines by a Guideline Clearing House. Clinical practice guidelines are an effective means to change the process of healthcare services; however, they could adversely affect the quality of medical care and the effectiveness of the healthcare system that result in the waste of resources if quality clinical practice guidelines are not developed. Therefore, a careful, prudent decision-making is required.

### Human resources for evidence-based medicine methods

Methods for Evidence-based medicine are key for development of clinical practice guidelines; however, there are an insufficient number of professionals with relevant experience. It is necessary to secure and nurture qualified personnel with pertinent experience for evidence-based medicine and systematic reviews are required in the development of clinical practice guidelines. It is also necessary to develop domestically feasible evidence-based methods adapted from researched developed by international guideline agencies or associations that can be distributed nationally.

### CONCLUSION

Clinical practice guidelines must be developed by reasonable and well-planned methods to provide required support in the fields where actual treatments are provided. Therefore, clinical practice guidelines must provide broad, critical, and unbiased information in regards to the benefits and limitations of diverse diagnoses and treatment methods. This way, doctors who provide treatments can effectively utilize clinical practice guidelines in individual decision-making for patient treatment. In all previous research, clinical practice guidelines are presented as capable to modify the behaviors of practitioners and improve treatment results. In Korea, while the activities of developing clinical practice guidelines are vitalized, we must develop and find execution ideas that are appropriate for the current conditions of the nation by fully considering research results. For this, a policy-backed support by the government is required; it is now time for the medical community and government to cooperate towards an important endeavor.

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