National Priority Setting of Clinical Practice Guidelines Development for Chronic Disease Management

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INTRODUCTION

As is the case worldwide, the disease burden of chronic disease is continually increasing in Korea (1-3). However, the quality of the treatment and management for chronic diseases remains low (4,5). In particular, the management quality in primary care medicine is at a relatively low level. For example, the rates of measurements of indicators of diabetes complications, such as glycosylated hemoglobin test, lipid profile test, and funduscopic examination, are lower in primary care clinics than in hospital-level facilities (6). Moreover, patient distrust of primary care and distortions of health-care delivery systems have caused many patients with chronic disease to prefer the services of hospital-level institutions (7-9).

As a key strategy for enhancing the management of chronic diseases in primary care clinics, the Korean Academy of Medical Sciences (KAMS) and the Korea Centers for Disease Control and Prevention have been jointly developing clinical practice guidelines (CPGs) for chronic diseases since 2011 (10,11). CPGs for hypertension and diabetes were developed in 2013. Several CPGs for major chronic diseases will continually be developed. In this process, the first step should be deciding priorities. Under the constraint of a limited funding, priority setting and resource allocation are required. Moreover, the fair selection of subjects, on the basis of evidence, is of fundamental importance to promote the development of CPGs and encourage the applications for guidelines in clinical fields (12).

Prioritization is a systematic approach to allocating resources for creating the “best” health-care system, subject to a variety of demands and limited resources (13,14). In addition, another strategy is to focus public attention and capabilities on key health issues (15). In decision making in complex health-care situations, a “reasonable side” and an “intuitive side” can be considered simultaneously when prioritizing alternatives for multiple criteria (16,17).

By establishing a special committee for priority setting and surveying objective and subjective assessments, this study identifies the chronic diseases that need to be prioritized in the development of CPGs in Korea.

MATERIALS AND METHODS

Overall process

The prioritization was performed as follows (Fig. 1): i) creating the CPG Priority-Setting Committee with representatives of 26 medical associations and CPG experts, ii) identifying the target...
chronic diseases, iii) collecting statistical data on those chronic diseases and examining the current developmental status of CPGs in Korea, iv) surveying the opinions of experts from the CPG Priority-Setting Committee by using the analytic hierarchy process (AHP) and a subjective assessment, and v) determining final priorities.

The CPG Priority-Setting Committee
The CPG Priority-Setting Committee was composed of experts representing the users and developers of CPGs. There were 36 members including primary care physicians from the Korea Medical Practitioners Association representing the end user, members of the CPG committee of KAMS, and experts on the methods of guideline development.

Identifying target chronic diseases
The prioritized targets among the chronic diseases were extracted by using the Global Burden of Disease (GBD) and the 2012 Health Insurance Statistics Yearbook (18). The GBD classifies the diseases and injuries into 291 causes, whereas the International Statistical Classification of Diseases and Related Health Problems 10th revision (ICD-10) classifies 22 classes, 267 categories, and 2093 subcategories. Among the 144 causes, those classified as noncommunicable diseases in the GBD were selected and matched with the ICD-10 categories. However, neoplasm, oral disorders, and hypertension and diabetes (the diseases for which CPGs are currently being developed by KAMS) were excluded. Finally, 41 chronic diseases were selected. Those diseases are the prioritized targets of this study.

Collection of statistical evidence and surveys of already developed CPGs
Prioritization in the development of CPGs for chronic diseases could provide standards for the fair distribution of resources in order to decrease the social burden of those diseases. Therefore, to reflect the impact of a chronic disease on the judgment of priority, condition-level criteria focused on the burden of the disease were selected (19). Four criteria were considered: prevalence rate, mortality, medical expenses, and disability-adjusted life years (DALYs). Statistical data for the numbers of patients and medical expenses of disease-specific ICD-10 codes by categories were extracted from the Health Insurance Statistics Yearbook. The mortality rate was extracted from the database of the National Statistical Office of Korea. DALYs were extracted, according to cause, from the GBD. The prevalence rate was applied to the number of patients as a proxy indicator. All data were normalized by using the z-score to enhance the comparativeness between the criteria. To identify the current developmental status of CPGs in Korea, a mail survey to 133 affiliated medical associations was conducted through KAMS. Data on the burden of disease and a list of available CPGs were provided to the committee for consideration in the prioritization process.

Expert surveys
The expert survey was performed in 2 ways: objective measurement methods with the AHP (objective assessment) and asking about subjective priorities for CPG development (subjective assessment). AHP is a multicriteria analysis performed to determine priority by classes after classifying the criteria. This method consisted of 4 steps. The first step was to create a decision model (20,21). The AHP in this study comprised 3 levels (Fig. 2). Level 1 involved the ultimate goal of the AHP; that is, the ranking of chronic diseases for which there is a need to develop CPGs. Level 2 involved the 4 criteria to be considered when CPGs are chosen for chronic diseases. We would have also liked to include variability as a criterion; however, we could not find data to clarify the current situation in Korea. Therefore, the developmental status of CPGs was surveyed instead of the variability. Level 3 involved identifying the 41 target chronic diseases. The AHP analysis model in this study is described below.

The second step was to determine the relative priorities of the criteria by making a series of pairwise comparisons among them with Saaty’s discrete 7-value scale method (20).
To calculate the geometric mean of each criterion in the matrix to obtain an approximate eigenvector that is the weighted value of the 4 criteria. Finally, the fourth step was to apply the weighted values to the standardized status (the z-score) of the 41 diseases. Consequently, the final prioritized diseases were determined. On the other hand, the subjective assessment was performed by asking about subjective priorities for CPG development. Each disease was evaluated on a 7-point scale in terms of priority for CPG development, and the priority order was selected by
summing the scores from the evaluators. The experts ranked the priorities by disease, excluding those diseases in their medical field. Therefore, the results were unaffected by the specific interests of expert societies.

**Final decision making**

The top 20 diseases that received high priority ratings through the AHP and as suggested by subjective assessment each were selected.

**RESULTS**

**Target diseases and burden of disease**

The 41 chronic diseases, their ICD-10 codes, and the burden of diseases are described in Table 1. Musculoskeletal diseases such as neck pain and osteoarthritis show a high prevalence and confers high medical expense but have low mortality rates. Although low in prevalence, cerebrovascular diseases present high DALY rates and high mortality.

**Prioritizing by expert survey**

Of the members of the CPG Priority-Setting Committee, 36 were surveyed with the AHP. Of them, 22 answered (61.1% response rate). The AHP assessment showed that among the criteria for measuring the burden of disease, high importance was placed on mortality and medical expenses (Fig. 3).

In both the AHP and subjective assessments, 7 diseases received an equal high priority: ischemic heart disease, cerebrovascular diseases, Alzheimer’s disease and other dementias, osteoarthritis, neck pain, chronic kidney disease, and cirrhosis of the liver. The AHP showed that cerebrovascular diseases had the highest priority for CPG development; cardiovascular diseases such as ischemic heart disease and dyslipidemia were also ranked highly. The priority level of musculoskeletal disorders, such as neck pain, low back pain, and osteoarthritis, was also high. The subjective assessment showed that cardiovascular diseases such as ischemic heart disease, cerebrovascular diseases, and dyslipidemia had high rankings. The top 20 diseases that received a high priority are shown in Table 2.

**DISCUSSION**

Recently, CPGs in various areas have been developed through the voluntary efforts of academic societies. However, despite the high burden of diseases and the clinical importance of CPGs, several major chronic diseases do not have CPGs (22,23). Moreover, some of the many CPGs that have been developed already require revision. By November 2013, there were 141 CPGs in Korea (see Table S1). If the first edition of a CPG and its revised version are counted as 1, there are now 125 CPGs that have been developed by 76 academic societies or institutions in Korea. Of them, 83 CPGs are related to chronic diseases. Moreover, among those CPGs for chronic diseases, 40 guidelines had been developed in the last 5 yr (since 2010). Considering the rate of the production of new evidence in medicine and the worsening of the burden of chronic diseases, the need for developing more CPGs for chronic diseases is becoming increasingly pressing.

Among the criteria used to measure the burden of disease with the AHP, medical expenses and mortality were considered of high importance. Diseases with a high burden, such as cerebrovascular diseases, ischemic heart disease, musculoskeletal disease, and dyslipidemia, received high rankings that indicate the need for the development of CPGs.
Cerebrovascular diseases and ischemic heart disease are serious causes of death in Korea, and the medical expenses and numbers of patients with these diseases are very high. Furthermore, when the major risk factors—hypertension and diabetes—are considered, the disease burden becomes even greater (24). However, among the guidelines developed since 2010, only 13 have targeted cerebrovascular diseases and only 2 have a focus on ischemic heart disease. Furthermore, unfortunately, although many CPGs have been developed in recent years, they have focused on use in tertiary hospital institutions. CPGs reflecting the clinical features in primary care, the values and preferences of patients, and the environment of primary care institutions for the management of chronic diseases are insufficient. CPGs for disease prevention, lifestyle management, and follow-up care after the acute period of disease should be developed. For example, CPGs about primary and secondary prevention, screening, mild stable angina management, and indications for referring to tertiary institutions would be useful.

The situation for musculoskeletal disorders is even more serious. To date, despite the high burden of musculoskeletal disease, only 2 of such diseases—osteoarthritis and rheumatoid arthritis—have CPGs in Korea. Given the high level of disease burden and the high variability in the behavior of health-care providers in musculoskeletal disorders (25), the development of more CPGs is urgently required. In addition, there is a pressing need for the development of guidelines on dementia, chronic renal failure, liver disease, asthma, and chronic obstructive pulmonary disease. Owing to the increase in the elderly population, the prevalence of dementia continues to increase (26). However, there is only one guideline related to dementia, which was developed in 2009, and it only covers disease diagnosis. Thus, the development of new guidelines for dementia is urgently needed, for application in various areas, including a set of detailed services about the prevention of disease, behavioral intervention, and pharmacological therapy, among others.

Moreover, the CPGs to be developed for those diseases are also expected to be consistent with national policies, in which the importance of cerebrovascular diseases, ischemic heart disease, and dementia has been increasing consistently. Those diseases are the main targets of “Health Plan 2020,” and risk factors such as smoking, drinking, exercise, and nutrition are the subjects of active management in the National Cerebrovascular Management Project, based on the National Health Promotion Act (27). In the case of dementia, the Dementia Management Act was enacted in 2012 and provides a legal foundation for prevention, early detection, and follow-up. Moreover, a dementia-screening program is being implemented throughout the country as a national policy. Furthermore, since the introduction of long-term care insurance, the frequencies of diagnosis, treatment, and care management by primary care physicians have increased (28). However, there is as yet no guideline for these physicians, which makes it difficult to provide appropriate services.

In this study, we found a high need for CPGs for chronic diseases in Korea. Considering the rate of the production of new evidence in medicine and the worsening of the burden from chronic diseases, the need for developing more CPGs for more chronic diseases is becoming increasingly pressing.

In most countries with advanced CPG development, the establishment of public-private partnerships (PPPs) has been emphasized to develop the most reliable guidelines at a high level, leading to a social consensus for any conflict resolution caused by the CPGs (29,30). The United States has mandated the use of PPPs in developing CPGs (31). In Australia, the principles of development and a social consensus about the legal status of CPGs have been developed jointly by medical societies and the government (32). In Korea, however, most of the developmental activities depend on professionals. KAMS has led the development of CPGs, whereas the government’s role has been confined to providing financial support. To develop high-quality CPGs, and to enhance implementation in practice, collaboration between professionals and the government is essential. PPP for financing, granting official status to accredited CPGs, and creating a favorable environment for implementation could lead to the development of CPGs with high quality.

DISCLOSURE

The authors have no potential conflicts of interest to disclose.

AUTHOR CONTRIBUTION

Design of the study: Jo HS, Oh MK. Data collection and analysis: Oh MK. Writing manuscript: Jo HS, Kim DI, Oh MK. Revision: Kim DI. Approval of approved final version of this manuscript: all authors.

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REFERENCES

1. Yoon SJ, Bae SC, Lee SI, Chang H, Jo HS, Sung JH, Park JH, Lee JY, Shin Y. Measuring the burden of disease in Korea. J Korean Med Sci 2007; 22: 518-23.
2. Khang YH. Burden of noncommunicable diseases and national state-
gies to control them in Korea. J Prev Med Public Health 2013; 46: 155-64.
3. Lozano R, Naghavi M, Foreman K, Lim S, Shibuya K, Aboyans V, Abraham J, Adair T, Aggarwal B, Ahn SY, et al. Global and regional mortality from 235 causes of death for 20 age groups in 1990 and 2010: a systematic analysis for the Global Burden of Disease Study 2010. Lancet 2012; 380: 2095-128.
4. OECD Health Division. OECD Health Care Quality Review: Korea, Assessment and Recommendation. Paris, France: OECD, 2012, p.12.
5. Lee JH, Choi YJ, Lee SH, Sung NJ, Kim SY, Hong JY. Association of the length of doctor-patient relationship with primary care quality in seven family practices in Korea. J Korean Med Sci 2013; 28: 508-15.
6. Health Insurance Review and Assessment Service. Diabetic healthcare quality assessment report. Seoul, Korea: Health Insurance Review and Assessment Service, 2014.
7. Lee JY, Jo MW, Yoo WS, Kim HJ, Eun SJ. Evidence of a broken healthcare delivery system in Korea: unnecessary hospital outpatient utilization among patients with a single chronic disease without complications. J Korean Med Sci 2014; 29: 1589-96.
8. Kwon S. Payment system reform for health care providers in Korea. Health Policy Plan 2003; 18: 84-92.
9. Ock M, Kim JE, Jo MW, Lee HJ, Kim HJ, Lee JY. Perceptions of primary care in Korea: a comparison of patient and physician focus group discussions. BMC Fam Pract 2014; 15: 178.
10. Oh MK, Jo H, Lee YK. Improving the reliability of clinical practice guideline appraisals: effects of the Korean AGREE II scoring guide. J Korean Med Sci 2014; 29: 771-5.
11. Lee YK, Shin ES, Shim JY, Min KJ, Kim JM, Lee SH; Executive Committee for CPGs; Korean Academy of Medical Sciences. Developing a scoring guide for the Appraisal of Guidelines for Research and Evaluation II instrument in Korea: a modified Delphi consensus process. J Korean Med Sci 2013; 28: 190-4.
12. Reddy BP, Kelly MP, Thokala P, Walters SJ, Duenas A. Prioritising public health guidance topics in the National Institute for Health and Care Excellence using the Analytic Hierarchy Process. Public Health 2014; 128: 896-903.
13. Mitton C, Donaldson C. Health care priority setting: principles, practice and challenges. Cost Eff Resour Alloc 2004; 2: 3.
14. Légaré F, Ratté S, Gravel K, Graham ID. Barriers and facilitators to implementing shared decision-making in clinical practice: update of a systematic review of health professionals’ perceptions. Patient Educ Couns 2008; 73: 526-35.
15. Geneau R, Stuckler D, Stachenko S, McKee M, Ebrahim S, Basu S, Chokalingham A, Mwatsama M, Jamal R, Ahwan A, et al. Raising the priority of preventing chronic diseases: a political process. Lancet 2010; 376: 1689-98.
16. Sabik LM, Lie RK. Priority setting in health care: Lessons from the experiences of eight countries. Int J Equity Health 2008; 7: 4.
17. Oh J, Ko Y, Alley AB, Kwon S. Participation of the lay public in decision-making for benefit coverage of national health insurance in South Korea. Health Syst Reform 2015; 1: 62-71.
18. Murray CJ, Ezzati M, Flaxman AD, Lim S, Lozano R, Michaud C, Naghavi M, Salomon JA, Shibuya K, Vos T, et al. GBD 2010: design, definitions, and metrics. Lancet 2012; 380: 2063-6.
19. Iglehart JK. Prioritizing comparative-effectiveness research–IOM recommendations. N Engl J Med 2009; 361: 325-8.
20. Saaty TL. Decision making with the analytic hierarchy process. Int J Serv Sci 2008; 1: 83-98.
21. Dolan JG, Isselhardt BJ Jr, Cappuccio JD. The analytic hierarchy process in medical decision making: a tutorial. Med Decis Making 1989; 9: 40-50.
22. Ahn HS, Kim HJ. Development and implementation of clinical practice guidelines: current status in Korea. J Korean Med Sci 2012; 27 S55-60.
23. Shin YS, Kim YI, editors. Health policy and management. Seoul, Korea: Seoul National University Press, 2013.
24. Lim D, Ha M, Song I. Trends in the leading causes of death in Korea, 1983-2012. J Korean Med Sci 2014; 29: 1597-603.
25. RAND, London School of Hygiene and Tropical Medicine, Ellen N, Jennifer N, Annalijn C, editors. International variation in the usage of medicines: a review of the literature. California, US: RAND, 2010, p3-4, 15-19.
26. Kim YJ, Han JW, So YS, Seo PY, Kim KY, Kim KW. Prevalence and trends of dementia in Korea: a systematic review and meta-analysis. J Korean Med Sci 2014; 29: 903-12.
27. Ministry of Health and Welfare. Health Plan 2020. Seoul, Korea: Ministry of Health and Welfare, 2011, p255-275.
28. Kang IO, Park CY, Lee Y. Role of healthcare in Korea long-term care insurance. J Korean Med Sci 2012; 27: 541-6.
29. Legido-Quigley H, Panti D, Brusamento S, Knaai C, Saliba V, Turk E, Solé M, Augustin U, Car J, McKee M, et al. Clinical guidelines in the European Union: mapping the regulatory basis, development, quality control, implementation and evaluation across member states. Health Policy 2012; 107: 146-56.
30. Bussières A, Stuber K. The Clinical Practice Guideline Initiative: a joint collaboration designed to improve the quality of care delivered by doctors of chiropractic. J Can Chiropr Assoc 2013; 57: 279-84.
31. Lo B, Field MJ; Institute of Medicine of the National Academies (US), Committee on Conflict of Interest in Medical Research, Education, and Practice. Conflict of interest in medical research, education, and practice. Washington, DC: National Academy Press, 2009, p191.
32. Korea Institute for Health and Social Affairs, Kim NS, Kim SY, Park EJ, editors. Promoting the Quality of Medicine: Based on Clinical Practice Guidelines. Seoul, Korea: Korea Institute for Health and Social Affairs, 2004, p28-30.
Table S1. One hundred forty-one CPGs lists developed since 1998 (as November 2013) in Korea

| Year | Clinical practice guidelines | Developer                                                                 |
|------|----------------------------|---------------------------------------------------------------------------|
| 2013 | 1) Guidelines for the Diagnosis and Treatment of Helicobacter pylori Infection in Korea, 2013 revised edition* | Korean College of Helicobacter and Upper Gastrointestinal Research          |
|      | 2) Guidelines for Nutritional Support in the Intensive Care Unit | Korean Society of Critical Care Medicine                                   |
|      | 3) Clinical Practice Guidelines for Stroke                      | Clinical Research Center for Stroke                                        |
|      | 4) Clinical Practice Guidelines for Stroke-Primary Prevention: Unruptured Intracranial Aneurysm |                                                                      |
|      | 5) Clinical Practice Guidelines for Stroke-Primary Prevention: Atrial Fibrillation |                                                  |
|      | 6) Clinical Practice Guidelines for Stroke-Acute Stroke Management: Thrombolysis |                                                   |
|      | 7) Guideline for Appropriate Use of Cardiac CT in Heart Disease  | Korean Society of Radiology                                               |
|      | 8) Global IDF/ISPAD Guideline for Diabetes in Childhood and Adolescence: Korean edition | Korean Society of Cardiology                                              |
|      | 9) Guidelines for Hypertension 2013*                            | Korean Society of Hypertension                                            |
|      | 10) Guideline for Primary Prevention of Cardio-Cerebrovascular Disease | Korean Academy of Family Medicine                                         |
|      | 11) Prevention and Treatment of Metabolic Syndrome for Adult in Korea | Korean Association for The Study of The Liver                             |
|      | 12) Guideline on Upper Gastrointestinal Endoscopy for Primary Care Physician |                                                                    |
|      | 13) Clinical Practice Guideline: Management of Hepatitis B*     | Clinical Research Center for Chronic Obstructive Airway Disease           |
|      | 14) Clinical Practice Guideline: Management of Non-Alcoholic Fatty Liver Disease | Korean Academy of Asthma, Allergy and Clinical Immunology                 |
|      | 15) Clinical Practice Guideline: Management of Alcoholic Liver Disease | Korean Rheumatism Association                                             |
|      | 16) Treatment Guidelines for Acute Asthma Attack*               | Clinical Research Center for Rheumatic Arthritis                          |
|      | 17) Guidelines for Treatment with Disease Modifying Anti-Rheumatic Drugs in patients with Rheumatoid Arthritis |                                                        |
|      | 18) Guideline for Treatment with Biologic Agents in patients with Rheumatoid Arthritis |                                                       |
|      | 19) Guideline for Treatment with Glucocorticid in patients with Rheumatoid Arthritis |                                                      |
|      | 20) Guideline for management of Cardiovascular Risk in patients with Rheumatoid Arthritis |                                                |
|      | 21) Guideline for Diagnosis and Assessment of Depression 2013* | Clinical Research Center for Depression                                 |
|      | 22) Physician’s Guide for Diagnosis and Treatment of Osteoporosis 2013* | Korean Society of Bone Metabolism                                       |
| 2012 | 23) Classification Criteria for Rheumatoid Arthritis            | Korean Rheumatism Association                                             |
|      | 24) Guidelines on Urinary Incontinence                         | Clinical Research Center for Rheumatic Arthritis                          |
|      | 25) Clinical Practice Guideline for Allergic Rhinitis*          | Korean Continence Society                                              |
|      | 26) Korean Guideline for the Management of Gastroesophageal Reflux Disease* | Korean Society of Otorhinolaryngology-Head and Neck Surgery             |
|      | 27) Cancer Pain Management Guideline                           | Korean Rhinology Society                                                |
|      | 28) Korean Medication Guidelines for the Treatment with Depressive Disorder* | Korean Society of Neurogastroenterology and Motility                   |
|      | 29) Guidelines of Vaccination for Adult in Korea*              | Korean College of Helicobacter and Upper Gastrointestinal Research      |
|      | 30) Guidelines for Antiplatelet Therapy on Acute Coronary Syndrome | Korean Society for Hospice and Palliative Care                           |
|      | 31) Clinical Guidelines for the Treatment and Prevention of Opportunistic Infections in HIV infected Koreans | Korean College of Neuropsychopharmacology                                  |
|      | 32) Clinical Practice Guidelines for the Management of Bacterial Meningitis in Adults in Korea | Korean Academy of Family Medicine                                       |
|      | 33) Clinical Practice Guidelines for Soft Tissue Infections     | Korean Society of Cardiology                                             |
|      | 34) Clinical Guidelines for the Antimicrobial Treatment of Bone and Joint Infections in Korea | Clinical Research Center for Ischemic Heart Disease                     |
|      | 35) Guidelines on Management of Gastric Cancer                 | The Korean Society for AIDS                                             |

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Table S1. Continued

| Year | Clinical practice guidelines | Developer |
|------|-----------------------------|-----------|
| 36) | Guidelines for the Management of Crohn’s Disease | Korean Association for the Study of Intestinal Diseases |
| 37) | Guidelines for the Management of Ulcerative Colitis | Clinical Research Center for End Stage Renal Disease |
| 38) | Clinical Practice Guideline for CAPD peritonitis | Korean Society of Nephrology |
| 39) | Korean Evidence Based Medication Guideline for Depression, revised* | Clinical Research Center for Depression |
| 40) | Practice Guidelines for the Early Detection of Cervical Cancer in Korea | Korean Society of Gynecologic Oncology |
|     | | Korean Society of Obstetrics and Gynecology |
|     | | Korean Society for Cytopathology |
| 41) | Clinical Practice Guidelines for Stroke-Secondary Prevention: Other antiplatelet agents: Triflusal, Dipyridamole, Clopidogrel | Clinical Research Center for Stroke |
| 42) | Korean Guideline for Attention-Deficit Hyperactivity Disorder | Korean Child Neurology Society |
| 43) | Clinical Practice Guideline for Antiviral Treatment and Chemoprophylaxis of Seasonal Influenza | Transgovernmental Enterprise for Pandemic Influenza in Korea |
| 44) | COPD Clinical Practical Guideline revised 2012 | Korean Academy of Tuberculosis and Respiratory Diseases |
| 45) | Korean Clinical Practice Guideline for Gastric Cancer | Korean Academy of Medical Sciences |
| 46) | Clinical Practice Guideline for Stroke Rehabilitation in Korea 2012 | Korean Society for NeuroRehabilitation |
| 2011 | | |
| 47) | Guidelines for Childhood Urinary Tract Infection | Korean Society of Pediatric Nephrology |
| 48) | Guidelines on Overactive Bladder | Korean Continence Society |
| 49) | Guidelines on Neurologic Bladder | Korean Society of Neurogastroenterology and Motility |
| 50) | Guidelines for the Treatment of Functional Dyspepsia | Korean College of Helicobacter and Upper Gastrointestinal Research |
| 51) | Korean Guideline for the Management of Gastroesophageal Reflux Disease* | Korean Society of Neurogastroenterology and Motility |
| 52) | Guidelines for the Treatment of Irritable Bowel Syndrome | Korean Diabetes Association |
| 53) | Guidelines for the Treatment of Constipation | Korean Society of Bone Metabolism |
| 54) | Treatment Guidelines for Diabetes 2011* | Korean Academy of Tuberculosis and Respiratory Diseases |
| 55) | Physician’s Guide for Diagnosis and Treatment of Osteoporosis 2011* | Korean Society for Chemotherapy |
| 56) | Guidelines for Tuberculosis | Korean Society for Tuberculosis |
| 57) | Clinical Practice Guideline: Management of Hepatitis B* | Korean Association for The Study of The Liver |
| 58) | Clinical Practice Guideline for Liver Cirrhosis, Update | Korean Association for The Study of The Liver |
| 59) | Korean Treatment Guideline for Atopic Dermatitis | Liver Cirrhosis Clinical Research Center |
| 60) | Clinical Guideline for the Diagnosis and Treatment of Urinary Tract Infections: Asymptomatic Bacteriuria, Uncomplicated and Complicated Urinary Tract Infections, Bacterial Prostatitis | Korean Dermatological Association |
| 61) | Clinical Guideline for the Diagnosis and Treatment of Cardiovascular Infections | Korean Society of Infectious Diseases |
| 62) | Evidence-based Guidelines for Empirical Therapy of Neutropenic Fever in Korea | Korean Society of Infectious Diseases |
| 63) | Clinical Guidelines for the Diagnosis and Treatment of HIV/AIDS in HIV-infected Koreans | Korean Society of Infectious Diseases |
| 64) | Guidelines for Management of Endometriosis | Korean Society for Chemotherapy |
| 65) | Guideline for Insulin Treatment and Glycemic Control in Patients with Type 2 Diabetes Mellitus | Korean Society of Clinical Microbiology |
| 66) | Korean Asthma Management Guideline for Adults* | Korean Society for Thoracic and Cardiovascular Surgery |
| 67) | Mechanical Ventilation in Chronic Obstructive Airways Disease: Korean Guideline, Revised | Korean Society of Infectious Diseases |
| 68) | Aspirin Primary Stroke Prevention | Korean Society for Hematology |
| 69) | Clinical Practice Guidelines for Stroke-Primary Prevention: Asymptomatic Stenosis for Primary Stroke Prevention | Korean Society for Clinical Oncology |
| 70) | Extracranial Carotid Artery Stenosis | The Korean Society for AIDS |

(Continued to the next page)
Table S1. Continued

| Year | Clinical practice guidelines | Developer |
|------|-------------------------------|-----------|
| 2010 | Guidelines for Percutaneous Coronary Intervention in patients with Left Main Coronary Artery Disease | Clinical Research Center for Ischemic Heart Disease |
| 72 | Guidelines for Reperfusion Therapy on Chronic Stable Angina | Korean Society of Cardiology |
| 73 | Clinical Guidelines for Precocious Precocity 2011 | The Korean Society of Pediatric Endocrinology |
| | Guideline for management of heavy menstrual bleeding | Korean Society of Obstetrics and Gynecology |
| 75 | Clinical Practice Guideline for Non-Small Cell Lung Cancer | Korean Association for the Study of the Lung Cancer |
| 76 | Clinical Practice Guideline for Otitis Media with Effusion | Korean Society of Otorhinolaryngology-Head and Neck Surgery |
| 77 | Korean Medication Guidelines for the Treatment with Bipolar Disorder Patients | Korean College of Neuropsychopharmacology |
| 78 | Korean Clinical Practice Guideline : Otitis Media in Children 2010 | Korean Society for Depressive and Bipolar Disorders |
| 79 | Practical Guidelines for Management of Gallbladder Polyps | Korean Society for Depressive and Bipolar Disorders |
| 80 | Guidelines of Vaccination for Adult in Korea† | Korean Academy of Family Medicine |
| 81 | Clinical Guidelines on Urothelial Cancer | Korean Urological Association |
| 82 | Clinical Guidelines on Benign Prostatic Hyperplasia | Korean Prostate Society |
| 83 | Clinical Guideline for the Diagnosis and Treatment of Gastrointestinal Infections | Korean Society of Infectious Diseases |
| 84 | Practice Guideline for Gynecologic Cancer | Korean Society of Clinical Microbiology |
| 2009 | Guidelines of Diagnosis for Peptic Ulcer Disease | Korean Academy of Tuberculosis and Respiratory Diseases |
| | Guidelines of Treatment for Community-acquired Pneumonia in Korea* | Korean Society for Infectious Diseases |
| | Guidelines of Treatment for Non-bleeding Peptic Ulcer Disease | Korean Society of Gastroenterology |
| | Guidelines of Treatment for Bleeding Peptic Ulcer Disease | Korean Society of Gastroenterology |
| | Guidelines of Prevention and Treatment for NSAID-related Peptic Ulcer | Korean Society of Gastroenterology |
| | Guidelines of Treatment for Peptic Ulcer Disease in Special Condition | Korean Society of Gastroenterology |
| | Diagnostic Guideline of Ulcerative Colitis | Korean Society of Gastroenterology |
| | Diagnostic Guideline of Crohn’s Disease | Korean Society of Gastroenterology |
| | Diagnostic Guideline of Intestinal Tuberculosis | Korean Society of Gastroenterology |
| | Diagnostic Guideline of Behcet’s Disease | Korean Society of Gastroenterology |
| | Treatment Guidelines for Dyslipidemia | Korean Society of Lipidology |
| | Guidelines for the Diagnosis and Treatment for Helicobacter pylori infection in Korea† | Korean Society of Gastroenterology |
| | Clinical Practice Guideline for the Management of Sedation and Pain in ICU for Adults | Korean Society of Critical Care Medicine |
| | Treatment Guidelines for Stable Angina, Revised* | Korean Society of Cardiology |
| | Clinical Practice Guideline for Dementia Part I: Diagnosis & Evaluation | Clinical Research Center for Ischemic Heart Disease |
| | Clinical Practice Guideline for Herpes Zoster and Postherpetic Neuralgia | Korean Society of Anesthesiologists |
| 2008 | Perioperative Management for the patients with Anticoagulant | Korean Pancreatobiliary Association |
| | Guidelines for Management of Difficult Airway | Korean Breast Cancer Society |
| | Korean Guideline for Chronic Pancreatitis | Clinical Research Center for Type 2 Diabetes |
| | Clinical Practice Recommendations for Breast Cancer | Clinical Research Center for Type 2 Diabetes |
| | Guidelines for Measuring the Intima-Media Thickness in Diabetes | Clinical Research Center for Type 2 Diabetes |
| | Guidelines for Diabetes Education | Clinical Research Center for Type 2 Diabetes |
| | Guidelines for Weight Control in patients with Type 2 Diabetes Mellitus | Clinical Research Center for Type 2 Diabetes |
| | Guidelines for Health Behavior in patients with Type 2 Diabetes Mellitus | Clinical Research Center for Type 2 Diabetes |
| | Korean Clinical Practice Guideline of Depressive Disorder 2008† | Korean Academy of Medical Sciences |
| | Evidence Based Medicine Guideline for Posttraumatic Stress Disorder | Korean Neuropsychiatric Association |
| | Blood Pressure Monitoring Guidelines | Korean Society of Hypertension |
| | Guidelines for Childhood Nephrotic Syndrome | Korean Society of Pediatric Nephrology |
| | Korean Treatment Guidelines for Obsessive-Compulsive Disorder | Korean College of Neuropsychopharmacology |
| Year   | Clinical Practice Guideline                                                                 | Developer                                                                 |
|--------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| 2006   | 123) Guidelines for the Management of Unruptured Intracranial Aneurysms                      | Korean Society of Cerebrovascular Surgeons                                |
| 124)   | Korean Medication Guidelines for the Treatment with Schizophrenic Patients                   | Korean College of Neuropsychopharmacology                                  |
| 125)   | Classification and Healing Results Reporting Guideline in Chronic Otitis Media Surgery       | Korean Otologic Society                                                   |
| 126)   | Guidelines for the Management of Asthma                                                     | Korean Academy of Medical Sciences                                         |
| 2005   | 127) Community-acquired Pneumonia Management Guideline for Adults in Korea                   | Korean Academy of Tuberculosis and Respiratory Diseases                   |
| 128)   | Treatment Guidelines for Community-acquired Pneumonia in Korea: An Evidence-based Approach to Appropriate Antimicrobial Therapy† | Korean Academy of Tuberculosis and Respiratory Diseases                   |
| 129)   | Korean Guidelines for Bronchial Asthma                                                      | Korean Academy of Tuberculosis and Respiratory Diseases                   |
| 130)   | Korean Guidelines for Chronic Obstructive Pulmonary Disease                                 | Korean Academy of Tuberculosis and Respiratory Diseases                   |
| 131)   | Treatment Guidelines for Rhinosinusitis                                                     | Korean Rhinology Society                                                  |
| 132)   | Guidelines on Management of Bladder Cancer*                                                  | Korean Urological Oncology Society                                         |
| 133)   | Guidelines on Management of Head and Neck Cancer                                             | The Korean Society for Radiation Oncology                                  |
| 2004   | 134) 2004 Korean Hypertension Treatment Guidelines†                                        | Korean Society of Hypertension                                            |
| 135)   | Guidelines on Management of Prostate Cancer                                                  | Korean Urological Association                                              |
| 136)   | Guidelines on Management of Renal Cell Carcinoma                                             | Korean Urological Oncology Society                                         |
| 137)   | Treatment Guidelines for Allergic Rhinitis†                                                   | Korean Rhinology Society                                                  |
| 2003   | 138) Korean Medication Guidelines for the Treatment with Major Depressive Disorder†          | Korean College of Neuropsychopharmacology                                  |
| 139)   | Guidelines on Pharmacologic Treatment of Epilepsy                                             | Korean Society for Depressive and Bipolar Disorders                       |
| 1997   | 140) Clinical Guidelines on Benign Prostatic Hyperplasia                                     | Korean Urological Oncology Society                                         |
| 141)   | Clinical Guidelines on Bladder Cancer†                                                       | Korean Urological Oncology Society                                         |

*Revised version; †Original version.