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## Critical Appraisal to Intraabdominal and Complicated Intraabdominal Guidelines to Develop Indonesian Specific Clinical Practice Guidelines

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## Critical Appraisal to Intraabdominal and Complicated Intraabdominal Guidelines to Develop Indonesian Specific Clinical Practice Guidelines

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### Abstract

**Introduction.** There were many clinical practice guidelines (CPG) intraabdominal infection/complicated intraabdominal infections (cIAI) have been developed since 1992 and were periodically updated recently. But to date, the implementation in Indonesia encountering problems. One is Indonesian characteristics which is differed to the population of where the CPG developed. To adapt a CPG, the quality of CPG should be first critically appraised. The best will be used further as the subject to be adapted, with modification regarding Indonesian characteristics.

**Method.** A literature search carried out on guidelines databases to find out CPG on cIAI (1992–2017). The assessment preceded using AGREE II tools (MyAGREE platform) focused on 23 assessments in 6 domains (scope and purpose, stakeholder involvement, rigour of development, clarity of presentation, applicability, and editorial independence). Such an assessment placed a guideline in rating of 1 to 7. Updated guidelines were assessed using Checklist for the Reporting of Updated Guidelines (CheckUp). Appraised CPG were discussed.

**Results.** There were 33 CPG in full text downloaded and subjected to selection criteria. Duplicates and those irrelevant were excluded. In the assessment there were 18 CPG included and 13 guidelines places the strong recommended category, two can be recommended and other 2 were not recommended. All updated CPG met the criteria of the best quality updates.

**Conclusion.** Two cIAI–CPG were met the criteria of the quality guidelines to be adopted. These guidelines were developed in accordance with appropriateness in development a CPG and were updated.

**Keywords:** *cIAI guidelines, AGREE II, CheckUp*

### Introduction

There were guidelines intraabdominal infection/complicated intraabdominal infections have been developed since 1992 to reduce mortality of those who suffered cIAIs. These guidelines, as the rules, were updated periodically where the last updated in 2017. Though it had been developed for years, its implementation in Indonesian surgeons almost nil, whereas De Simone and colleagues showed in a review that an inexpensive and easily application of guidelines based on medicine evidence in the use of antibiotics can lead to a significant reduction of hospital costs with outcomes improvement.<sup>1</sup> There were explanatory reasons proposed. Firstly, Indonesian characteristics of which is differed to the population in centers of where those guidelines developed. This issue is a reason of why the guideline couldn't be implemented by many surgeons. Secondly, a guideline should be critically appraised prior to endorsing its recommendations to reduce unnecessary variations in care.<sup>2</sup> Guidelines are also meant to eliminate unnecessary and unjustified variations in practice, but their efficacy in that regard is debatable. Naturally, clinical guidelines cannot be applied to eradicate variations because an enormous number of variables — for example, local characteristics and comorbid conditions — influencing clinical decisions. Guidelines may consider variations in clinical settings, resources, and other variables, but may not always adjust for the combination of resources that may be available to a physician. In addition, it would be unwise, even if it were possible, to provide completely uniform care because some variations, such as those that result from an individual physician's professional judgment, are universally acceptable.<sup>2</sup>

Therefore, despite providing Indonesian epidemiology of microorganisms related to cIAIs which is Indonesian specific, we run an appraisal to published guidelines from 1992 to 2017 to find out the best and suitable for Indonesian. These will be of benefit to adapt the best one, with modification to Indonesian characteristics.

### Method

Guidelines search preceded on all available guidelines database sites: Ärztliches Zentrum für Qualität in der Medizin (AEZQ, German Agency for Quality in Medicine), Guidelines Advisory Committee (GAC, Canada), Guidelines International Network (GIN), Grading of Recommendations Assessment, Development and Evaluation (GRADE), Haute Autorité de Santé (HAS, France), Institute for Clinical Systems Improvement (ICSI), National Guideline Clearinghouse (NGC), National Institute for Health and Care Excellence (NICE), New Zealand Guidelines Group (NZGC), and publishers (BioMed central, ClinicalKey, EBSCOhost, Embase–Elsevier, Liebertpub, Oxford, ProQuest, PubMed, ScienceDirect, Springer, etc.). The keywords used was: ‘clinical practice guidelines’, AND ‘intraabdominal infections’, OR ‘IAIs’, AND ‘complicated intraabdominal infections’, OR ‘cIAIs’. All CPGs about IAIs and cIAIs. These CPGs were screened out for duplicates and those where the full text available were included to the appraisal. The appraisal carried out using AGREE II Tools (My AGREE PLUS platform, available online, [www.agreetrust.org/agree-ii/](http://www.agreetrust.org/agree-ii/)) rating 23 assessments (1 to 7) in six domains, i.e. scope and purpose, stakeholder involvement, rigour of

development, clarity of presentation, applicability, and editorial independence. Overall quality of guidelines was analyzed, where the criteria of the best was those with the greater scores. The updates were also subjected to appraisal in accordance with Checklist for the Reporting of Updated Guidelines (CheckUp)<sup>3</sup> The assessment was carried out independently by experts. There were sixteen assessments in the CheckUp as follows. 1) The updated version can be distinguished from the previous version of the clinical guideline, 2) The rationale for updating the clinical guideline is reported, 3) Changes in the scope and purpose between the updated and previous version are described and justified, 4) The sections reviewed in the updating process are described, 5) Recommendations are clearly presented and labelled as new, modified, or not changed. Deleted recommendations are clearly noted, 6) Changes in recommendations are reported and justified, 7) The panel participants in the updated version are described, 8) Disclosures of interests of the group responsible for the updated version are recorded, 9) The role of the funding body for the updated version is identified and described, 10) The methods used for searching and identifying new evidence in the updating process are described, 11) The methods used for evidence selection in the updating process are described, 12) The methods used to assess the quality of the included evidence in the updating process are described, 13) The methods used for the evidence synthesis in the updating process are described, 14) The methods used for externally reviewing the updated version are described and 15) The methods and plan for implementing the changes of the updated version in practice are described, and 16) The plan and methods for updating the new version in the future are reported. In contrast to scoring applied in AGREE II tools to find out the best one, the criteria as the best was those with score of 16 (where one represent score for each assessment).

The recommendation of such a CPGs based on the criteria in AGREE user manual 2001 (revised on 2013),<sup>4</sup> applied by Gorman in his appraising CPGs on pharmacotherapy<sup>5</sup> stated that a guideline can be strongly recommended if the majority of item scores are 3 or 4 and the majority of standardized domain scores are 60% or greater. A guideline can be recommended with alterations if there

are equal numbers of item scores 3 or 4 and 1 or 2, and most standardized domain scores are between 30 and 60%. A guideline cannot be recommended if majority of item scores are 1 or 2, and most standardized domain scores are 30% or less.<sup>5</sup>

## Results

On literature search, there were 68 guidelines available in those databases and downloaded. On the first selection, there were 33 cIAIs related-guidelines included. On the second selection, there were thirteen cIAIs-CPGs and five IAIs-CPGs enrolled in the assessment. Out of these, the majority of cIAIs guidelines developed by Infectious Diseases Society of America (IDSA) and World Society of Emergency Surgery (WSES). There were also CPGs developed by Canadian Surgical Society (CSS) and Canadian Association of Medical Microbiology and Infectious Disease (AMMI), France, Spanish, Turkish, and Asian developed a single guideline each. Other related guidelines developed were, Tokyo guidelines in the management for cholangitis and cholecystitis; European Association for the Study of the Liver (EASL) guidelines for primary biliary cholangitis, and Japanese Society for Abdominal Emergency Medicine guideline for acute abdomen. Most guidelines were focused on the management, whereas 4 were focused on antibiotics; it was noticed five guidelines were the updated CPGs (see table 1 for detail).

On the first step of assessment using AGREE II tools, mostly total scores were >60% (see table 1 for detail); only a few items were scores under 30%. In accordance with AGREE scoring, those with the majority (>4) items scores were greater than 60% were set as strongly recommended (see table 2). The next step was to appraise for updating. For this purpose, following assessment it found that all updates were having a same score, which was 20 (see table 3). Thus, those of the two latest CPGs were recommended to be adopted.

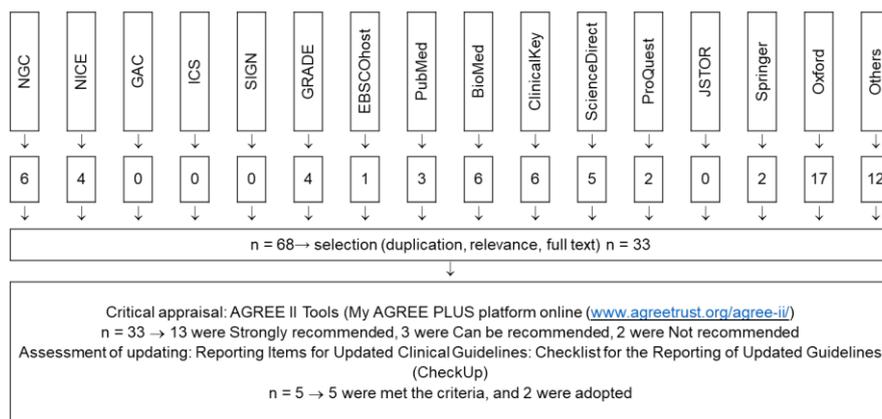


Figure 1. Literature search, selection, and appraising

Table 1. Critical appraisal of IAIs (cIAIs) CPGs using AGREE II Tools

	Author(s)	Year	Guidelines	Scope and Purpose	Stakeholder Involvement	Rigour of Development	Clarity of Presentation	Applicability	Editorial Independence
1	Mazuski, et al	2002	The Surgical Infection Society Guidelines on Antimicrobial Therapy for Intra-Abdominal Infections: Evidence for the Recommendations	96.6%	90%	29%	100%	35%	27%
2	Solomkin, et al	2003	Guidelines for the Selection of Anti-infective Agents for Complicated Intra-Abdominal Infections	100%	100%	77.1%	76%	27%	54.5%
3	Chow, et al	2010	Canadian practice guidelines for surgical intra-abdominal infections	83.3%	76.6%	93.8%	100%	62.5%	54.5%
4	Solomkin, et al	2010	Diagnosis and Management of Complicated Intra-Abdominal Infections in Adults and Children: Guidelines by the Surgical Infection Society and the Infectious Diseases Society of America	90%	76.6%	73.5%	96.6%	81.3%	54.5%
5	Eckman, 2011	2011	Antimicrobial Treatment of Complicated Intraabdominal Infections and The New IDSA Guidelines - A Commentary and An Alternative European Approach According to Clinical Definitions	56.6%	63.3%	49%	43.3%	18.8%	54.5%
6	Sartelli, et al	2011	WSES consensus conference: Guidelines for first line management of intraabdominal infections	36.6%	86.6%	65.6%	86.6%	50%	54.5%
7	Sartelli, et al	2013	2013 WSES guidelines for management of intra-abdominal infections	93.3%	83.3%	60.4%	96%	72.4%	54.5%
8	Yamashita, et al	2013	TG13 surgical management of acute cholecystitis	93.3%	100%	48%	80%	56.3%	41%
9	Kurup, et al	2014	Antibiotic management of complicated intra-abdominal infections in adults: The Asian perspective	70%	63%	15.6%	10%	14.5%	54.5%
10	Montravers, et al	2015	Guidelines for management of intra-abdominal infections	100%	93.3%	83.3%	100%	79.2%	54.5%
11	Vildan, et al	2016	Recommendations for intra-abdominal infections consensus report	100%	100%	88.5%	80%	83.3%	54.5%
12	Di Saviero, et al	2016	WSES Jerusalem guidelines for diagnosis and treatment of acute appendicitis	93.3%	90%	69.8%	66.6%	48%	54.5%
13	Ansaloni, et al	2016	2016 WSES guidelines on acute calculous cholecystitis	83.3%	96.6%	74%	90%	62.5%	54.5%
14	Sartelli, et al	2016	WSES Guidelines for the management of acute left sided colonic diverticulitis in the emergency setting	70%	90%	54.2%	80%	50%	54.5%
15	Mazuski, et al	2017	The Surgical Infection Society Revised Guidelines on the Management of Intra-Abdominal Infections	86%	100%	90.6%	100%	89.5%	54.5%
16	Sartelli, et al	2017	Management of intra-abdominal infections: recommendations by the WSES 2016 consensus conference	93.3%	76.6%	92.7%	93.3%	52%	54.5%

Table 2. Critical appraisal of IAIs (cIAIs) CPGs using AGREE II Tools (cont.)

	Author(s)	Year	Guidelines	Scope and Purpose	Stakeholder Involvement	Rigour of Development	Clarity of Presentation	Applicability	Editorial Independence
17	Sartelli, et al	2017	The management of intra-abdominal infections from a global perspective: 2017 WSES guidelines for management of intra-abdominal infections	100%	100%	80.2%	73.8%	87.5%	54.5%
18	Hirschfield, et al	2017	EASL Clinical Practice Guidelines: The diagnosis and management of patients with primary biliary cholangitis	100%	100%	100%	93.3%	92%	54.5%

Table 2. Critical appraisal of IAIs (cIAIs) CPGs using AGREE II Tools

Clinical practice guidelines				Critically appraised
1	Mazuski, et al	2002	The Surgical Infection Society Guidelines on Antimicrobial Therapy for Intra-Abdominal Infections: Evidence for the Recommendations	Can be recommended
2	Solomkin, et al	2003	Guidelines for the Selection of Anti-infective Agents for Complicated Intra-Abdominal Infections	Can be recommended
3	Chow, et al	2010	Canadian practice guidelines for surgical intra-abdominal infections	Strongly recommended
4	Solomkin, et al	2010	Diagnosis and Management of Complicated Intra-Abdominal Infections in Adults and Children: Guidelines by the Surgical Infection Society and the Infectious Diseases Society of America	Strongly recommended
5	Eckman, 2011	2011	Antimicrobial Treatment of Complicated Intraabdominal Infections and The New IDSA Guidelines - A Commentary and An Alternative European Approach According to Clinical Definitions	Not recommended
6	Sartelli, et al	2011	WSES consensus conference: Guidelines for first line management of intraabdominal infections	Can be recommended
7	Sartelli, et al	2013	2013 WSES guidelines for management of intra-abdominal infections	Strongly recommended
8	Yamashita, et al	2013	TG13 surgical management of acute cholecystitis	Strongly recommended
9	Kurup, et al	2014	Antibiotic management of complicated intra-abdominal infections in adults: The Asian perspective	Not recommended
10	Montravers, et al	2015	Guidelines for management of intra-abdominal infections	Strongly recommended
11	Vildan, et al	2016	Recommendations for intra-abdominal infections consensus report	Strongly recommended
12	Di Saviero, et al	2016	WSES Jerusalem guidelines for diagnosis and treatment of acute appendicitis	Strongly recommended
13	Ansaloni, et al	2016	2016 WSES guidelines on acute calculous cholecystitis	Strongly recommended
14	Sartelli, et al	2016	WSES Guidelines for the management of acute left sided colonic diverticulitis in the emergency setting	Strongly recommended
15	Mazuski, et al	2017	The Surgical Infection Society Revised Guidelines on the Management of Intra-Abdominal Infections	Strongly recommended
16	Sartelli, et al	2017	Management of intra-abdominal infections: recommendations by the WSES 2016 consensus conference	Strongly recommended
17	Sartelli, et al	2017	The management of intra-abdominal infections from a global perspective: 2017 WSES guidelines for management of intra-abdominal infections	Strongly recommended
18	Hirschfield, et al	2017	EASL Clinical Practice Guidelines: The diagnosis and management of patients with primary biliary cholangitis	Strongly recommended

Table 3. Assessment of updated IAIs (cIAIs) CPGs using CheckUp Tools

Authors	Date	Updated CPGs	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total
Solomkin, et al	2003	Guidelines for the Selection of Anti-Infective Agents for Complicated Intra-Abdominal Infections	1	1	1	1	1	1	1	1	1	1	1	1	1	2	3	2	20
Solomkin, et al	2010	Diagnosis and Management of Complicated Intra-Abdominal Infection in Adults and Children: Guidelines by the Surgical Infection Society and the Infectious Diseases Society of America	1	1	1	1	1	1	1	1	1	1	1	1	1	2	3	2	20
Sartelli, et al	2013	2013 WSES guidelines for management of intra-abdominal infections	1	1	1	1	1	1	1	1	1	1	1	1	1	2	3	2	20
Mazuski, et al	2017	The Surgical Infection Society Revised Guidelines on the Management of Intra-Abdominal Infection	1	1	1	1	1	1	1	1	1	1	1	1	1	2	3	2	20
Sartelli, et al	2017	Management of intra-abdominal infections: recommendations by the WSES 2016 consensus conference	1	1	1	1	1	1	1	1	1	1	1	1	1	2	3	2	20

Such a grouping carried out based on the population of normal flora of a region. The pattern of microorganism grew in the media culture of pus taken from abdominal cavity intraoperatively was as follows. Data in dr. Soetomo hospital showed that out of 114 subjects, bacteriology exams preceded on 65 subjects (57%) only for unknown reason, and data in dr. Cipto Mangunkusumo showed that out of 74 isolates taken from 58 subjects (41.34%) there were no growth.<sup>16</sup> The five mostly found organisms in the culture was *Escherichia coli* (35.41%), *Klebsiella pneumonia* (13.44%), others (9.84%) *Enterobacter cloaca* (9.34%), *Proteus mirabilis* (8.69%), *Enterococcus faecalis* (7.87%), *Acinetobacter baumannii* (5.74%), *Staphylococcus epidermidis* (3.44%), *Pseudomonas aeruginosa* (3.44%), *Staphylococcus haemolyticus* (1.31%), *Klebsiella oxycata* (0.66%), and *Staphylococcus aureus* (0.66%) were also reported (table 1). Data obtained from Hasan Sadikin General Hospital were not solely from pus, but in combination with sputum and blood samples. However, the data was reported in a published study of Asian population.<sup>17</sup> Data of bacterial susceptibility to

antibiotic were obtained from three centers, i.e. RSCM, Soetomo and Sardjito, and were found not different; whereas data from other four were insufficient and unable to be analyzed further. In the collection, the focused were on the most organisms found from pus specimen of intraabdominal (see table 2 to 5).

## Discussion

By definition it is clear that complicated intraabdominal infection is a clinical entity, namely a syndrome which is not a clinical diagnosis listed in the international classification of diseases.<sup>6</sup> It was a new insight (although, it wasn't really a new one, since the entity realized to be a focus as the paradigm of sepsis shifted after 1980s) and were the focus of those who involved in the management, as the entity offered a poor prognosis even though the new antibiotic generations were used.<sup>7</sup> The experts who were clinicians with a great concerns in such a focus think that the syndrome should be treated strategically, which is surgical and the antibiotic<sup>8,9</sup> tried to developed guidelines based on the highest evidence to have a better outcome in addition to minimize or even to control irrational use of empiric antibiotic. But it should be noted that it was not a kind of regulation to eradicate variations.<sup>2</sup>

For this purpose, guideline of a high quality is required. A quality CPGs rigorously developed evidence based guidelines minimize the potential harms. But indeed, they have potential benefits and harms.<sup>10</sup> Quality of guidelines as the confidence that the potential biases of guideline development have been addressed adequately and that the recommendations are both internally and externally valid, and are feasible for practice,<sup>4,11</sup> thus it should be evaluated. The assessment includes judgments about the methods used for developing the guidelines, the components of the final recommendations, and the factors that are linked to their uptake.<sup>11</sup>

The use of AGREE II tools was based on recent systematic reviews that a tool is an outstanding on CPGs appraising.<sup>12-14</sup> Out of thirty-three CPGs related to cIAIs, eighteen were selected and based on the assessment, there were thirteen guidelines were 'strong recommended', three were 'can be recommended' and other two were 'not recommended'. The assessment of this kind using a tool that lead to a judgement of how to find out guidelines of the best quality. The key point is the development process, but not the recommendations.

Of these CPGs, there should be some to be chosen to be adopted. Then, the option was to assess the updating. A quality of CPGs is when it continuously updated. Regarding assessment of this update, CheckUp can be used to evaluate the completeness of reporting in updated guidelines and as a tool to inform guideline developers about reporting requirements. Editors may request its completion from guideline authors when submitting updated guidelines for publication. Adherence to CheckUp will likely enhance the comprehensiveness and transparency of clinical guideline updating for the benefit of patients and the public, health care professionals, and other relevant stakeholders.<sup>3</sup> But, as concluded by Vernooij et al, there are currently no gold standards for guideline updating methodology. Nonetheless, updating is key to ensuring trustworthy, implementable, and clinically relevant recommendations. Current guideline evaluation tools or guideline method resources (e.g., AGREE II, Grading of Recommendations Assessment, Development, and Evaluation (GRADE), IOM Standards, and the like) are not simply transferable to the conceptual requirements of an updated guideline. CheckUp addresses the gap: it has been supported by our study participants and is a resource that complements (rather

than competes with) the other high-quality tools available in the guideline enterprise.<sup>3</sup>

This appraisal using assessment tools formulated by AGREE offered a lot of critical insight to a CPGs to be implemented or adopted since it deals with the process of how a recommendation is formulated, not to the statement of recommendation itself. Thus, it might have described of why a CPGs encountering barriers in the implementation.<sup>4,11,15</sup> In contrast, it supposed to be some critical points for the developers.

Out of eighteen CPGs, there were eleven CPGs focused on the management comprehensively starting with population at risk (or high risk), diagnostic, surgical and antibiotic management; whereas the rest were focused solely on antibiotics. This should be noticed, that antibiotic is an integral part of management, but not the only. It was seen that those with comprehensive measurement were categorized as strong recommended, that might be benefit to those dealing with cIAIs; and certainly, for the patient safety. It referred to be required in the clinical practice.

## Conclusion

Perforated appendicitis, perforated gastric and duodenal ulcer, small bowel perforation, large bowel perforation, and postoperative in sequent are the main causal of cIAI in Indonesia. The epidemiology predominated by Gram negative, particularly *Escherichia coli* and *Klebsiella pneumoniae*.

## Disclosure

This study has no conflict of interest.

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