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Original Article

The Trainee's Operative Experiences for General Surgery in Thailand

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Abstract

Background: **In Thailand, each trainee in general surgery is requested to have experiences of 100 major operative procedures as an operator and 400 operative procedures as an assistant during 4 years. Many major procedures were recommended in the course syllabus, but some trainees seemed to select easier cases to operate, resulting in insufficient experiences as a general surgeon.**

Materials & Methods: **An electronic logbook program was implemented since the academic year 2006. In this study, only the data of trainees who started their training from the academic years 2008 and 2009 were analyzed, because they had just finished their training in the academic years 2011 and 2012.**

Results: **The electronic operative records of 162 trainees were analyzed. By average, each trainee operated 257 procedures as a chief operator (100 required), and assisted 482 procedures (400 required) during 4-year training. As an operator, the first procedure was appendectomy, followed by inguinal hernia operation, and upper GI endoscopy. As an assistant, the first procedure was laparoscopic cholecystectomy, followed by median sternotomy and inguinal hernia operation. Among 15 essential procedure groups, the average number of performance per trainee was over the minimal requirement for almost all procedures, except thyroidectomy and liver surgery.**

Conclusion: **The electronic logbook operative records program allowed a more accurate and easier analysis of the trainees' operative experiences than the written logbook system. All trainees had operative experiences more than the eligibility criteria.**

Keywords: **Electronic logbook, electronic operative record, essential procedure, resident's operative experience, trainee's operative experience**

Introduction

In Thailand, postgraduate training for general surgery is a 4-year program. An academic year starts from the beginning of June until the end of May of following year. Each trainee is required to have experiences of 100 major operative procedures as a chief surgeon and 400 operative procedures as an assistant to be eligible for the board examination. After implementation of electronic logbook program, the trainees' operative experiences were relatively easy to follow[1-2]. The Training and Examination Subcommittee (TES) of the Royal College of Surgeons of Thailand (RCST) has recommended many major procedures in the course syllabus for general surgeon training. However, examiners notice that some trainees intended to fulfill 100 major operative procedures by selecting relatively easier ones instead of completing all suitable procedures. On the other hand, the operative procedures available in each training institute vary among the institutes[1,3-4]. Some trainees may miss

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some essential procedures if there are not enough cases for particular procedures. It is important to complete all essential procedures during the elective period and avoid missing some essential procedure[5-6].

Materials & Methods

An electronic logbook program was first implemented in academic year 2006. All active trainees were encouraged to register and record their operative experience into this database. However, at that time each trainee can choose to record his experience either in electronic form or in paper-based logbook. Since the academic year 2008, all new trainees had to register and record their experiences via only electronic logbook, and then all active trainees had to do the same since the academic year 2009. Only data of trainees who started on the academic years 2008 and 2009 were analyzed, because they have finished their training on the academic years 2011 and 2012.

In the electronic logbook program database, operative procedures were categorized into 23 groups; skin & subcutaneous tissue, breast & endocrine, esophagus & diaphragm, stomach, small intestine, colorectal & anus, hepatobiliary & pancreas, spleen, abdominal wall, abdominal cavity, vascular, amputation, endoscopy, head & neck, appendix, laparoscopy, pediatric surgery, urology, plastic surgery, orthopaedics, neuro-surgery, thoracic surgery, and gynecology. The first 16 groups cover all procedures required to be a general surgeon.

In the academic year 2012, the TES selected 15 procedure groups as the essential procedure groups out of the 23 surgical procedure groups. As mentioned above, each trainee is required to accomplish 100 major operative procedures to be eligible for board examination, and among 100 major operative procedures, 55 procedures should be selected from the 15 essential procedure groups. For the 23 operative procedure groups, the frequency of experience of trainees as operators and as assistants was analyzed. For the 15 essential operative procedure groups, only the frequency of experience of trainees as chief operating surgeons was analyzed.

In the academic year 2012, many essential procedures were added into the list of procedures of electronic logbook program. In some previous procedure lists either name or group was changed. These changes limited data analysis of all 162 trainees, so only 90 trainees of year 2012 were selected. Some data was modified to fit the criteria of essential procedures. Data analyses were divided to 2 parts: 162 trainees' records of 23 operative groups including general surgery and affiliated fields, and 90 trainees' records of 15 essential procedure groups.

Data analyses included the number of incidence; percentage, average, median and standard deviation were calculated, using a program in the Microsoft Excel 2007. This study was approved by the Khon Kaen University ethic committee in human research, following Declaration of Helsinki and ICH GCP, on 1st June 2012.

Results

There were 82 and 94 trainees who completed the 4-year training course in the academic year 2011 and 2012, respectively. Among them, 10 trainees from the year 2011 and 4 from the year 2012 were excluded, due to incompleteness of data in their logbook. All records of the remaining 162 trainees (72 in the year 2011 and 90 in the year 2012) were extracted from the database, and each trainee's experience of the procedures as a chief operator or an assistant was analyzed. By average, each trainee experienced 257 (range 100-1252, median 202) procedures as an operator (minimal requirement = 100), and 482 (range 400-1097, median 445) procedures as an assistant (minimal requirement = 400) during the 4-year training course. The most common procedures among the 23 operative groups were identified. As an operator, the top three procedures were appendectomy, inguinal hernia operation, and upper GI scopy, respectively (Table 1). As an assistant, the top three procedures were laparoscopic cholecystectomy, median sternotomy and inguinal hernia operation, respectively (Table 2).

For the 15 essential operative procedure groups, only 90 trainees' data of the academic year 2012 were available. Except for thyroidectomy and liver surgery, the average number of 15 essential procedure groups per trainee was higher than the minimal requirement (Table 3). Among 14 training institutes, only 12th training institute (T12) had a sum of the average essential procedures less than 55, a sum of the minimal requirement of the essential procedures per trainee (Figure 1).

Table 1 The 23 common procedures of operative groups which trainees acted as chief surgeons.

Operative group	Procedure	Average
Abdominal cavity	Laparotomy for trauma	6.83
Abdominal wall	Inguinal hernia, operation	25.25
Amputation	Below knee (BK)	3.90
Appendix	Appendectomy	72.60
Breast & endocrine	Modified radical mastectomy	7.96
Colon, rectum, anus	Hemorrhoidectomy	5.01
Endoscopy	Upper GI scopy	19.92
Esophagus & diaphragm	Esophageal dilatation	1.41
Gynecology	Cystoscopy + proctoscopy	0.20
Head & neck	Tracheostomy	4.16
Hepatobiliary & pancreas	Cholecystectomy	8.21
Laparoscopy	Laparoscopic cholecystectomy	8.21
Neuro surgery	Burr hole craniotomy	1.50
Orthopaedics	Simple repair tendon injury	0.24
Pediatric surgery	Herniotomy	1.20
Plastic surgery	Skin graft	1.89
Skin and subcutaneous tissue	Excision skin / subcutaneous tumor	11.37
Small intestine	Small bowel resection	2.76
Spleen	Splenectomy	1.67
Stomach	Closure perforation	9.62
Thoracic surgery	Thoracotomy	0.74
Urology	Cystoscopy	2.15
Vascular	A-V fistula, operation	2.80

Table 2 The most common procedures of 23 operative groups which trainees acted as assistants.

Operative group	Procedure	Average
Abdominal cavity	Laparotomy for trauma	9.11
Abdominal wall	Inguinal hernia, operation	24.07
Amputation	Above knee (AK)	1.95
Appendix	Appendectomy	18.53
Breast & endocrine	Modified radical mastectomy	20.58
Colon, rectum, anus	Colectomy	13.73
Endoscopy	Colonoscopy	8.78
Esophagus & diaphragm	Esophagectomy	2.10
Gynecology	Hysterectomy	2.43
Head & neck	Thyroid lobectomy	7.16
Hepatobiliary & pancreas	Cholecystectomy	15.39
Laparoscopy	Laparoscopic cholecystectomy	33.92
Neuro surgery	Craniotomy with others	7.35
Orthopaedics	ORIF	1.37
Pediatric surgery	Herniotomy	3.18
Plastic surgery	ORIF	5.00
Skin and subcutaneous tissue	Excision skin / subcutaneous tumor	8.22
Small intestine	Lysis adhesion	2.99
Spleen	Splenectomy	2.70
Stomach	Gastrectomy	5.19
Thoracic surgery	Median sternotomy	25.44
Urology	TUR-P	3.21
Vascular	A-V fistula, operation	16.81

Table 3 Average number per trainee of 15 essential procedural groups.

Group	Procedure	Minimum	Average	SD
1	Inguinal hernia operation	10	17.94	9.86
2	Surgery of stomach (gastrectomy, simple suture, gastro-intestinal anastomosis)	5	12.06	7.45
3	Mastectomy (partial/total), axillary surgery (ALND/SLN)	5	7.62	5.25
4	Amputation of lower extremity (below/above knee)	5	5.41	3.75
5	Ostomy procedures (gastrostomy, jejunostomy, ileostomy, colostomy)	5	7.57	5.87
6	Anal surgery (fistula/fissure)	5	7.10	4.22
7	Laparoscopic cholecystectomy	5	6.26	4.02
8	Hemorrhoidectomy	3	3.45	2.92
9	Colectomy (partial/total)	3	5.10	4.14
10	Thyroidectomy (partial/total)	2	1.35	1.28
11	Small bowel resection	2	2.91	3.02
12	Open cholecystectomy	2	5.59	4.68
13	Resection of rectum (anterior/low anterior/A-P resection)	1	1.76	2.14
14	Liver surgery (lateral segmentectomy, wedge resection)	1	0.84	1.02
15	Vascular surgery (vascular anastomosis, varicose vein)	1	5.46	5.63

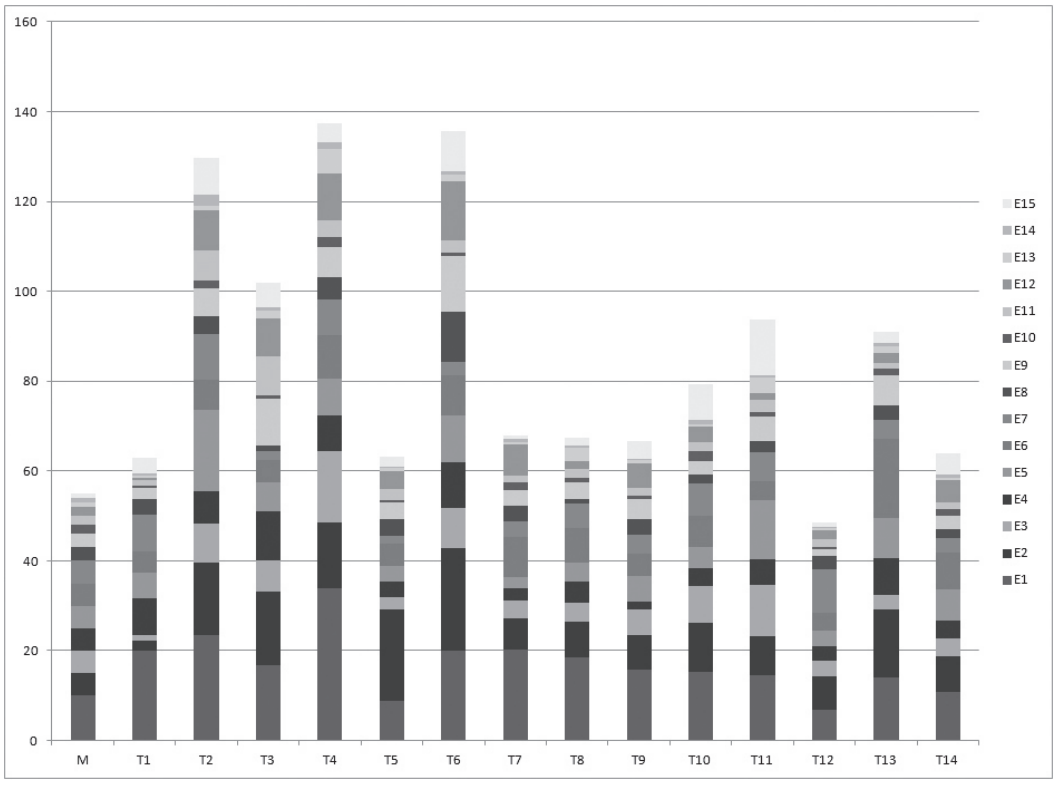


Figure 1 Distribution of 15 essential procedural groups (E1-E15) in the 14 training institutes (T1-T14) with reference to the minimal requirement (M) of 55 essential procedures.

Discussion

The TES recognized improper distribution of self-operated major procedures in some trainees' logbook, such as 60 appendectomies within 100 required operations, which cast some doubts on the ability of these trainees as well-trained general surgeons. In the academic year 2012, the TES proposed 15 essential procedure groups with minimal requirement in each group. The sum of the specified procedures was 55 cases. Each trainee was allowed to choose the remaining 45 cases by himself. This would improve the

quality of training, following the western standards[7-10].

Some training institutes should pay attention to their trainees who have an average number of some essential procedures below the minimal requirement. Availability of wide range of operative procedures in the training institutes is one of the most important factors in providing high quality training[1]. The TES determined 100 major operative procedures for an operator and 400 operative procedures for an assistant for board examination eligibility. This study showed 2.5 times of self-operated cases (257:100) and only 1.2 times of assisted-operated cases (482:400). The ratio of real assisted procedures VS recorded assisted procedures should be 2:1. Most trainees recorded a few numbers of assisted procedures over the minimal requirement, only 16 from 162 trainees (9.87%) experienced more than 800 assisted procedures. Missing data should be considered because excess records had no gain but wasted time.

There were 23 of 162 trainees (14.19%) recorded between 100 to 120 procedures (median 112) as chief surgeons, and 400 to 560 procedures (median 410) as assistants. By average, the percentage of appendectomy in these trainees was near the percentage of appendectomy in all trainees (26% VS 28%). However, there were 2 trainees who recorded appendectomy more than half of their self-operated procedures, 65 from 108 (60.18%) and 61 from 113 (53.98%). This deviated data was only a personal problem which each institute should consider individually.

In western countries, reduction of trainee's work hour was implemented to improve the trainee's quality of life. Several studies confirmed that the improvement of trainee's quality of life paralleled with compromised patient care and training quality[11-12]. In Thailand, trainee's work hour ranges from 80 to 136 hours per week, depending on training institute. Now, the TES recommends 100 hours per week or less.

Conclusion

The electronic logbook program makes analysis of trainees' operative experiences easier. All trainees had operative experiences more than the eligibility criteria, 257 operations as an operator and 482 operations as an assistant. Implementation of essential procedures will improve the quality of new surgeons.

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