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## Curriculum development for basic gynaecological laparoscopy with comparison of expert trainee opinions; prospective cross-sectional observational study

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### ABSTRACT

**Objective:** To develop content for a basic laparoscopic curriculum in gynaecology.

**Study design:** Prospective cross-sectional observational study. Modified Delphi method with three iterations undertaken by an invited group of national experts across the United Kingdom (UK). Two anonymous online surveys and a final physical group meeting were undertaken. Junior trainees in gynaecology undertook a parallel iteration of the Delphi process for external validation. Population included: expert panel – certified specialists in minimal-access gynaecological surgery, RCOG national senior trainee representatives, and medical educationalists, junior trainees group – regional trainees in gynaecology in first and second year of speciality training.

**Results:** Experts ( $n=37$ ) reached fair to almost complete significant agreement ( $\kappa=0.100-0.8159$ ;  $p < 0.05$ ) on eight out of nine questions by the second iteration. Trainees ( $n=19$ ) agreed with the experts on 89% (51/57) of categories to be included in the curriculum.

Findings indicated that 39 categories should be included in the curriculum. Port placement, laparoscopic equipment and patient selection were ranked the most important theoretical categories. Hand-eye co-ordination, camera navigation and entry techniques were deemed the most valuable skills. Diagnostic laparoscopy, laparoscopic sterilisation, and laparoscopic salpingectomy were the operations agreed to be most important for inclusion. Simulation training was agreed as the method of skill development. The expert panel favoured box trainers, whereas the junior trainee group preferred virtual reality simulators. A basic simulation laparoscopic hand-eye co-ordination test was proposed as a final assessment of competence in the curriculum.

**Conclusion:** Consensus was achieved on the content of a basic laparoscopic curriculum in gynaecology, in a cost- and time-effective, scientific process. The Delphi method provided a simple, structured consumer approach to curriculum development that combined views of trainers and trainees that could be used to develop curricula in other areas of post-graduate education.

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### Introduction

Laparoscopic surgery (LS) has become the standard approach for many gynaecological procedures, but it brings increased clinical risk when performed by trainee surgeons [1,2]. The Halstedian adage of see one, do one, teach one no longer holds true in an era of rising public expectations and increasing litigation [3,4]. A national

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survey of gynaecology trainees has highlighted substantial deficiencies in conventional training for LS, [5] and there is now good evidence to show that simulation can improve LS skills in gynaecology [6]. Successful integration of simulation training into the curriculum could improve knowledge of LS, and psychomotor skills such as hand-eye co-ordination, minimising harm to patients.

Previous research has assessed the quality criteria for a good skills laboratory [7]. However, the content of a curriculum in basic laparoscopy has not been explored and key stakeholders (trainees) have not been previously included in the development process [7]. The Fundamentals of Laparoscopic Surgery (FLS) programme, developed by general surgeons in the United States of America (USA) is the best-described basic laparoscopy curriculum in the literature [8-10]. It consists of both a cognitive and psychomotor skills component. In the UK and worldwide there is currently no similar agreement on the content and structure of a basic laparoscopy curriculum in gynaecology, encompassing theory and simulation for junior trainees [11,12].

Postgraduate medical curricula are developed primarily by working parties; consisting of a small number of experts in a series of informal face-to-face meetings [13]. The Delphi technique was designed as a way to derive the opinion of experts, without necessarily bringing them together. It has previously been used successfully for curricula development in a variety of specialities [14-16].

Our study aimed to utilise a Delphi consensus method to identify and prioritise the content and structure of a basic laparoscopic curriculum, and to seek the views of a cohort of junior trainees for external validation.

## Materials and methods

### Design of modified Delphi method

This included a first round survey of open-ended questions, a second round survey to rank the importance of categories, and finally a coordinating group discussion (Fig. 1). Two anonymous questionnaires were used, which were compiled into an online survey using Survey Monkey® (Palo Alto, CA). The questionnaires were beta-tested and validated. Face/content validity of the questions were assessed from piloting the questionnaires across a small group of general gynaecologists (n=5). Reliability of the questionnaire (test-retest reliability) was established by the same pilot respondents (n=5) where both questionnaires were completed on two separate occasions one week apart. Data were collected between March and June 2012.

### Population co-ordinating panel

This panel consisted of an educationalist (KH), laparoscopic surgeon (JF), general gynaecologist (MJ), trainee (CB) and a non-clinical administration member. Representatives were chosen from each stakeholder group and for their previous experience in education and/or simulation training. Expert group – participants were recruited from the Royal College of Obstetricians and Gynaecologists (RCOG) curriculum committee, RCOG heads of school committee, RCOG trainee representative committee, and the British Society of Gynaecological Endoscopy (BSGE) council members. Potential participants were emailed (n=52) an invitation to participate including an explanation of the study, with a link to the questionnaire. A separate email was circulated for each round, and a reminder sent after a month. Junior trainees group – (n=21) first and second year trainees in gynaecology in the south-west region of the UK were emailed with a request to participate in the second online survey.

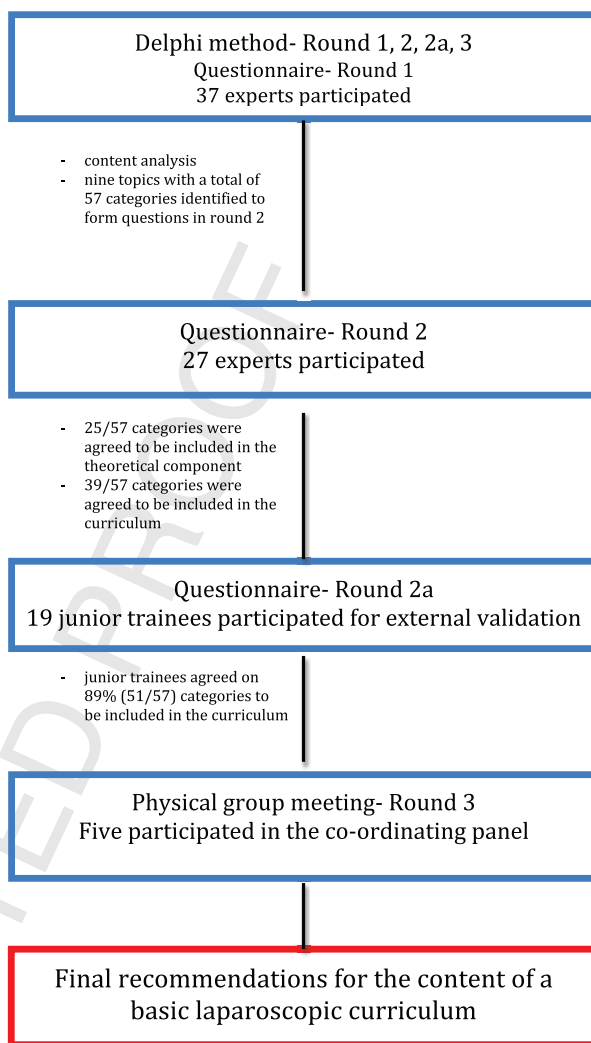


Fig. 1. Modified Delphi process used to select and prioritise the content of a basic laparoscopic curriculum in gynaecology.

### First Delphi round (1st online survey)

This iteration identified broad categories for the curriculum. Experts were invited to describe their answers to three open-ended questions (Appendix 1). Responses to the open-ended questions were analysed qualitatively by content analysis [17]. One researcher (CB) carried out the initial coding and categorisation using frequencies, and another researcher (MJ) independently cross-checked the results. Researchers compared results, and the process of validation and cross-comparison continued until agreement was achieved. Responses were then edited to form the main topics of the questions for the second questionnaire.

### Second Delphi round (2nd online survey)

The expert panel were asked to rank the importance of each selected educational category identified from the first Delphi round (Q1-9). The scoring ranged from one (very important) to eleven (not important) depending on the number of choices per question. A further two questions (Q10 and 11) assessed opinions on the completion of the curriculum prior to training progression and live operating (Appendix 2), scored on a five-point Likert scale ranging from (strongly agree) to (strongly disagree). The junior

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