

# Simulator Availability Index: a novel easy indicator to track training trends. Is Europe currently at a urological training recession risk?

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**Introduction** To evaluate the European trend regarding the availability of surgical simulators and to propose a novel index to easily track this trend.

**Material and methods** During European Urology Residents Education Program, from 2014 to 2018, residents were asked through an anonymous survey about the availability of specific simulator training boxes at their department. The Simulator Availability Index (SAI) was made by the ratio between the number of departments with at least one box trainer and the total number of departments evaluated.

**Results** The SAI decreased in five years from 0.47 to 0.41 for laparoscopic trainers, while the already low initial SAI (0.17) decreased by up to 0.05 in four years for both ureteroscopy (URS) and transurethral resection (TUR) trainers.

**Conclusions** A self-analysis may be advisable in order to improve the spread of information and investigate whether any specific reasons may be responsible for this trend. The SAI might be a simple but useful tool to monitor and evaluate this trend in the context of national training plans.

**Key Words:** training ↔ urology ↔ simulators ↔ laparoscopy ↔ endourology ↔ residents

## INTRODUCTION

One of the basic principles of economy is to invest in what is considered potentially more valuable. Investments involve a risk and a tradeoff in terms of time and economic resources but if the investment is a sound one, sooner or later the benefits will be worthwhile. In some ways, education does not differ. An Institution invests in the training of young surgeons in order to get benefits in terms of surgical outcomes which are fundamental for both the

patients and for the departments themselves. Since surgical simulations have largely been proven to reduce learning curves and improve surgeons' skills at a relatively low cost [1, 2], it's certainly something that a newbie economy trader would also consider a 'sure bet'. Over the last decade the European Association of Urology (EAU) has strongly invested in the role and promotion of urological simulation training with meetings, courses, certifications and scientific contributions. In this light, the European Urology Residents Education Program (EUREP)

has become the main event and for a few consecutive years, trainees have been surveyed regarding their training and practical attitudes [3, 4].

To evaluate the investments in the training field we aim to propose the Simulator Availability index (SAI) as a novel easy indicator.

## MATERIAL AND METHODS

During EUREP, from 2014 to 2018 more than 200 residents in urology have participated yearly in hands on training in basic laparoscopic urological skills (E-BLUS), stone skills (EST) and transurethral resection (TUR). They were asked through an anonymous survey about the availability of specific simulator training boxes (laparoscopic, TUR-simulator and URS-simulator) within their department. The SAI was made by the ratio between the number of departments with at least one box trainer and the total number of departments evaluated.

Data were entered into a Microsoft Excel (Version 14.0) database and then transferred to SPSS Version 22.0 TM for Windows. The join-point regression (JPR) model was used to identify significant changes in mean annual average percent change over time for each training model. The JPR model is used to better describe trends that are not constant over time and allows for evaluating statistically significant changes (join-points) in trends. An analysis of the average annual % of change (AAPC) further completes the evaluation.

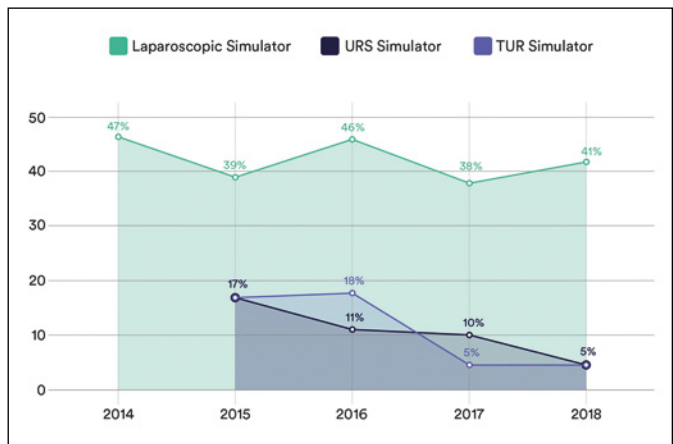
## RESULTS

One hundred and eighty-eight attendees replied regarding the availability of simulators in 2014, 243 in 2015, 235 in 2016, 196 in 2017 and 241 in 2018. What emerged from the analysis of the data is actually unexpected: in Europe we are seeing a slow reduction in the availability of simulators in academic departments (Figure 1).

The SAI decreased in five years from 0.47 to 0.41 for laparoscopic trainers, while the already low initial SAI (0.17) decreased by up to 0.05 in four years for both URS and TUR trainers. Similarly, the AAPC was -2.9%, -1.4% and -39.1% respectively for laparoscopic, URS and TUR simulators.

## DISCUSSION

Simulation training has been widely demonstrated to be useful in improving surgical skills, reducing the learning curve and its overall mutual benefit for both surgeons and patients [5].



**Figure 1.** Urologic Simulator Availability Index: 2014–2018 European trends.

URS – ureteroscopy; TUR – transurethral resection

When investors do not invest in something considered to be a ‘sure bet’ there are three main reasons: shortage of feedstocks (commercial goods deficit), shortage of capital (funding deficit) or failure to identify a good investment (information deficit). The current widespread availability of numerous professional and home-made validated training models with variable and relatively low prices, especially with a view to the budget of any European surgical department, makes the first two hypotheses less likely [6, 7]. While the effort of the EAU and other associations in this sense is unquestionable, it could be that the widely spread information has been clearly understood by the users (trainees) but not equally by the investors (departments).

In this light, a self-analysis may be advisable in order to improve the spread of information and investigate if any other reasons may be co-responsible for this trend.

## CONCLUSIONS

In recent years there has been a slow decrease in the availability of laparoscopy and endourology simulators in the European urological departments. Although this scenario is derived from a limited sample, the trend is worrisome, particularly given the proven usefulness of training simulators for the surgical training of young urologists.

The SAI might be a simple but useful tool to monitor and evaluate this trend in the context of national training plans.

## CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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