

# YouTube for Rapid Sequence Intubation Learning, Is It Reliable?

## Hızlı Seri Entübasyon Öğrenimi için YouTube Güvenilir Bir Kaynak Mı?

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### ABSTRACT

**Objective:** We aimed to evaluate the educational videos about rapid sequence intubation (RSI) and their compliance with ACLS-RSI guideline on the worlds biggest video-sharing site, YouTube.

**Methods and Methods:** The search was conducted on February 1, 2017 by using the terms "rapid sequence intubation" and "rapid sequence induction and intubation" and evaluated 200 videos according to this results. All the videos were viewed by two emergency physicians who were blinded to each other and were scored between 0 and 7 points.

**Results:** 147 videos excluded and study group was composed of 53 videos. As total score; 17 (32.1%) videos received less than 3 points, 19 (35,8) videos received between 3 and 5, and 17 (32.1%) of them received more than 5. The videos uploaded by an institution had higher points however it was not statistically significant (p=0.566).

**Conclusion:** As a result, our study revealed that majority of the videos about rapid sequence intubation on YouTube are not compliant with ACLS-RSI guideline. Most of the uploaders did not elaborate recommendations of the guideline.

**Key Words:** Rapid sequence intubation, YouTube, medical education

### ÖZET

**Amaç:** Bu çalışmada, dünyanın en büyük video paylaşım sitesi olan YouTube'daki hızlı seri entübasyon videolarını değerlendirmeyi ve onların ACLS-RSI (Advanced Cardiac Life Support- Rapid Sequence Intubation) kılavuzları ile uygunluğunu değerlendirmeyi amaçladık.

**Gereç ve Yöntem:** 1 Şubat 2017 tarihinde YouTube kaynağında "rapid sequence intubation" ve "rapid sequence induction and intubation" anahtar kelimeleri kullanılarak yapılan arama sonucu bulunan 200 video çalışmaya dahil edildi. Bu videolar birbirlerinden bağımsız iki ayrı acil tıp uzmanı tarafından 0 ve 7 puan aralığında değerlendirildi.

**Bulgular:** 147 video dışlanarak 53 video çalışma grubunu oluşturdu. Bu videolardan 17'si (%32.1) toplamda 3 ya da daha düşük puan alırken, 19'u (%35.8) 3 ve 5 arasında, 17'si (%32.1) 5 puanın üzerinde değerlendirildi. Bir kurum tarafından yüklenen videoların puanları daha yüksekti ancak bu yükseklik istatistik olarak anlamlı değildi (p=0.566).

**Sonuç:** Sonuç olarak, YouTube kaynağındaki hızlı seri entübasyon videolarının çoğunluğu ACLS-RSI kılavuzlarına uygun değildi. Yükleyicilerin çoğu kılavuz önerilerini dikkate almamıştı.

**Anahtar Kelimeler:** Hızlı seri entübasyon, YouTube, tıp eğitimi

## Introduction

Intubation is a crucial procedure performed by emergency physicians in emergency departments (ED) (1). Rapid sequence intubation (RSI) is an airway management technique that produces inducing immediate unresponsiveness (induction agent) and muscular relaxation (neuromuscular blocking agent) and is the fastest and most effective means of controlling the emergency airway. RSI is particularly useful in emergency departments because of its protective features with a patient with a full stomach and intact gag reflex, who has a life threatening injury and require immediate airway control (2). RSI is the recommended method for emergency airway management (3).

In emergency setting, definitive airway must be delivered to cardiopulmonary arrest patients in no time with crash intubation. However for other patients who requires ventilation support should undergo RSI process (4).

Advanced Cardiac Life Support (ACLS) guideline also recommends RSI technique (5).

RSI consists of 7 steps which is known 7Ps;

1. Preparation
2. Preoxygenation
3. Pretreatment
4. Paralysis with induction
5. Protection and positioning
6. Placement with proof
7. Post-intubation management

Airway management is one of the crucial specialty of both emergency physicians and anesthesiologists. Therefore, they should be well-trained about this process. Traditional training in airway management relies on use of airway mannequins and intubations in the controlled setting of the operating room in fasting, preoxygenated patients (6).

On the other hand, videotape educational review has an important role in training individuals. Health professionals also use internet and video-sharing sites for educational purposes with increasing rates over years. (7).

In this study, we aimed to evaluate the educational videos about rapid sequence intubation (RSI) on the worlds biggest video-sharing site, YouTube. And also we focused on collecting preliminary information both for medical staff using YouTube for education and the ones producing content for that staff.

## Material and Method

We conducted a search on YouTube on February 1, 2017 by using the terms "rapid sequence intubation" and "rapid sequence induction and intubation" and evaluated 200 videos according to these results. Our exclusion criterias were as follows:

- \* Videos that were uploaded before 2010
- \* Videos on any other subjects other than RSI
- \* Video language other than English
- \* Recurrent videos
- \* Videos with ads
- \* Videos not for educational purposes

The videos in the study group were evaluated in terms of the uploader, length of video, view count and use of models or human subjects for practice. All the videos were scored between 0 and 7 points by two emergency physicians and they were blinded to each other. The scoring criteria were based on ACLS – RSI guideline (updated 2014) (Table 1). When two viewer scored different values for the same video, the average of two scores was accepted as final score. We assumed videos receiving scores higher than 5 as sufficient.

**Statistical Analysis:** The data was analysed by SPSS 18.0 software. Numeric variable was presented as median (IQR: interquartile ratio) and frequent variables as rates. Two group comparisons for numeric variables were performed by Mann Whitney U test and Kruskal Wallis test was performed for three or more group comparisons. Normality analysis

was performed by Shapiro Wilks test. All the hypothesis was constructed as two tailed and alpha critical value of 0.05 was accepted as significant.

**Table 1.** The scoring criteria \*

Intervention (7p)	Score
Preparation	1
Preoxygenation	1
Pretreatment	1
Paralysis with induction	1
Protection and positioning	1
Placement with proof	1
Post intubation management	1

\*Based on Advanced Cardiac Life Support (ACLS): Rapid Sequence Induction and Intubation

## Results

We found 200 videos with given search terms and 147 of them were excluded in accordance with exclusion criteria. Remaining 53 videos constituted the study group (Figure 1). Two independent emergency physician viewed and scored the study group.

In study group, the most viewed video had 568854 view count and least viewed had 17 and mean view count of study group was 53218 (mean:53218, std dev. 1,143). 23 (43,4%) videos had more than 10.000 views.

In our study group, the shortest video was 55 seconds and the longest was 1 hour 9 minutes 29 seconds. Mean length was 10 minutes 36 seconds.

Capnography for verification of tube placement, as suggested in AHA-ERC guidelines, was mentioned in 25 (47.2%) of 53 videos.

22 (41,5%) videos showed RSI practice on human, 17 (32,1%) showed on mannequins, 13 (24,5%) on both and 1 (1,9%) used none.

As total score; 17 (32,1%) videos received less than 3 points, 19 (35,8) videos received between 3 and 5, 17 (32,1%) of them received more than 5 points.

The characteristics of the videos in the study are shown in table 2.

Median score of the videos was 4 (IQR:3-5). According to upload year; despite median score of videos in 2015-2016 was higher than that of 2010-2012 and 2013-2014 years, that was not statistically significant.

**Table 2.** Characteristics of the videos

	n	%
Upload date (year)		
2010	8	15,1
2011	7	13,2
2012	2	3,8
2013	8	15,1
2014	9	17
2015	10	18,9
2016	9	17
Uploader type		
Institutional (University, Society...)	20	37,7
Individual	20	37,7
Unknown	13	24,5
View count		
<10000	30	56,6
≥ 10000	23	43,4
Mentioned capnography for verification?		
Yes	25	47,2
No	28	52,8
RSI application on		
Human	22	41,5
Mannequin	17	32,1
None	13	24,5
Both	1	1,9
Total scores received		
≤3 points(1-2-3)	17	32,1
3<x≤5 points (3,5 – 4 - 4,5 - 5)	19	35,8
>5 points (5,5 - 6 – 6,5 – 7)	17	32,1
<b>Total</b>	<b>53</b>	<b>100</b>

**Table 3.** Video scores in terms of variables

Variables	Score Median (IQR)	p value
Upload date (year)		
2010-2012	4 (2,50)	0,565
2013-2014	4 (2,50)	
2015-2016	5 (3,00)	
Uploader type		
Institutional (University, Society...)	5 (2,00)	0,566
Individual	4 (2,00)	
Unknown	4 (3,00)	
View count		
< 10000	4,5 (3,00)	0,622
≥ 10000	4 (2,00)	

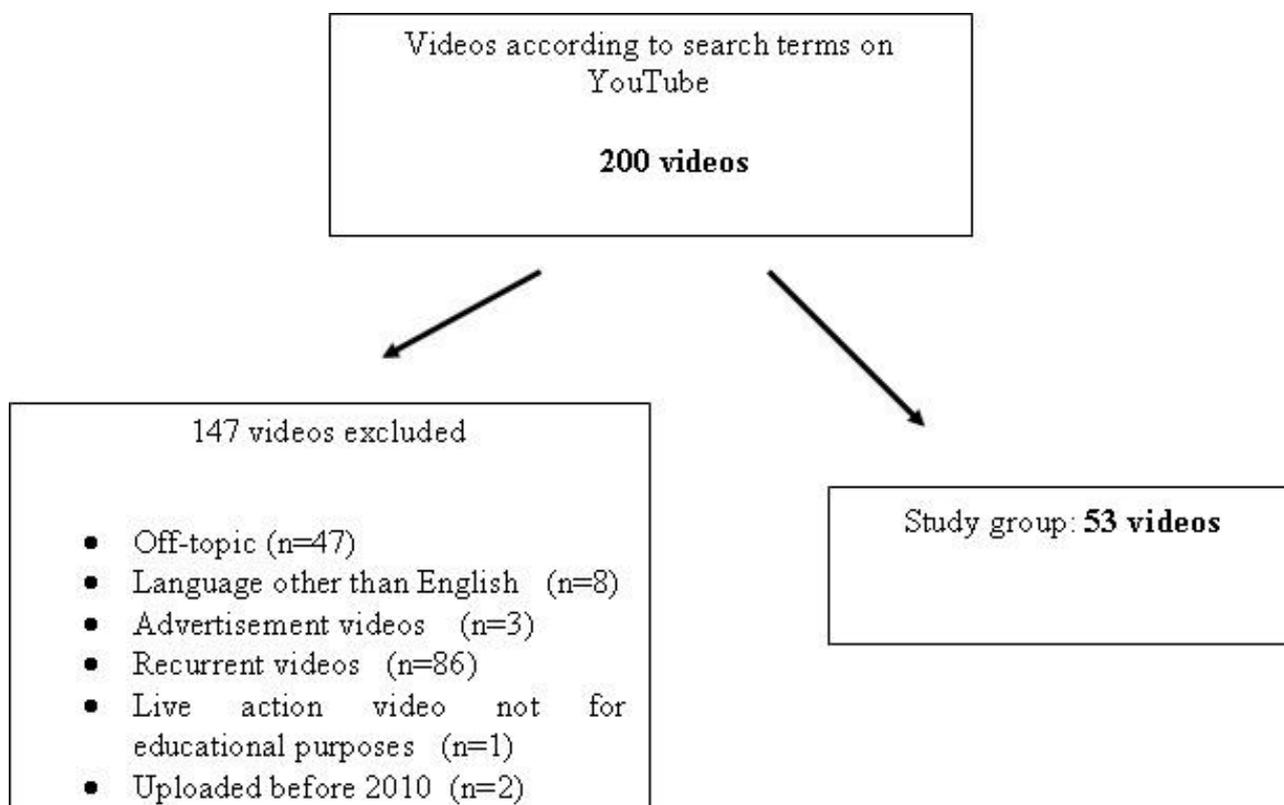
t[5 (IQR: 3) vs 4 (IQR: 2,5), 4(IQR:2,5) , p= 0.565)]. When we evaluate the uploader type; median score of the institution group was higher than other groups however that was not statistically significant [5 (IQR: 2) vs 4 (IQR: 2), 4(IQR:3) , p= 0.566)]. The comparison of video scores in terms of variables is presented in Table 3.

### Discussion

YouTube is one of the biggest video-sharing site of the world. Due to its accessibility, it allows uploader to communicate and share information with people around the world. Healthcare personnel and medical students use internet and video-sharing sites for educational purposes especially for interventional procedures (7).

Airway management is one of the most important skills for an emergency physician to master because failure to secure an adequate airway can quickly lead to death or disability (8).

Endotracheal intubation with rapid sequence intubation (RSI) technique is the cornerstone of emergency airway management (9,10). Several studies show that RSI is a safe and effective way of airway management (11,12)

**Fig. 1.** Video flow chart

That's why all emergency physicians supposed to be well-trained about rapid sequence intubation and must master all steps of the procedure.

In this study, we analyzed the videos due to our search on YouTube with terms "rapid sequence intubation" and "rapid sequence induction and intubation" according to ACLS-RSI guideline. Despite there are some analyses of video-sharing sites on various topics like trauma management and cardiopulmonary resuscitation in scientific databases, there are no studies about endotracheal intubation (13). In that point, our study is the pioneer.

Median score of total study group was 4 on total score of 7 (IQR:3-5) and it is not satisfactory as medical teaching video. Although videos uploaded by institutions had higher median score than other groups, that was not statistically significant. On the other hand, this might be a limitation of low number of videos in study group (n:53).

At the same time, whilst capnography is highly recommended for verification of tube position, 52,8% of the videos did not mention capnography (5).

In our opinion, there are several aspects that might be harmful by spreading inappropriate information. First of all, score of videos did not have any correlation with view counts and rankings in YouTube search. Similar studies showed the same result in different topics (14). Secondly, YouTube users can upload videos regardless of their knowledge of health, professionalism and medical qualities. View counts indicate that the audience take no account of the quality of uploader (13). Lastly, even institutions can upload insufficient videos, there is no mechanism to check the sufficiency and quality of videos. When we conceive that healthcare providers increasingly use internet sources for educational purposes, these data has to be uploaded with supervision.

As a conclusion of this study, in order to maintain video reliability and quality, video sharing sites should separate these videos into another tab like academic or educational and supply some supervision to this type of videos.

**Limitations :** YouTube is a dynamic platform so it's content is varying day by day. We performed this study in a specific timeline and it is possible that more videos has been added about this topic. Additionally, we are not sure if we could achieve all videos about RSI with these search terms.

## Conclusion

As a result, our study revealed that majority of the videos about rapid sequence intubation on YouTube are not compliant with ACLS-RSI guideline. Most of

the uploaders did not elaborate recommendations of the guideline. As much as healthcare providers and medical students use internet sources for educational purposes, supervision will become a requirement for academic internet use. We aimed to flash on and give preliminary information to content makers for medical education.

**Conflict of Interest:** All authors declare that they have no conflict of interest.

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