IMPROVING IUCD USAGE AMONG REPRODUCTIVE WOMEN WITH DIABETES MELLITUS IN HEALTH CLINICS OF PERLIS

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Abstract

Pregnant women with diabetes mellitus pose an increased risk of maternal and infant morbidity and mortality. In Perlis, for the year of 2016, only 3 (0.3%) out of 1,114 reproductive women with diabetes mellitus were using an intrauterine device (IUCD) as their main contraceptive measure. This project aims to improve the usage of IUCD to 10% among reproductive women with diabetes mellitus in nine health clinics of Perlis.

A retrospective contraception card review was undertaken to determine the baseline in providing IUCD services. Two sets of validated questionnaires were distributed to patients and healthcare providers in the pre and post-remedial period.

Customised training sessions were organised for both doctors and nurses' group. A quick reference for IUCD was developed to guide the healthcare providers during counselling sessions. The Model of Good Care (MOGC) was integrated into the Maternal and Child Health State Plan of Action 2016 to ease the supervision of quality improvement.

Of the 244 diabetic women who had undergone counselling, 44 (18%) agreed to use IUCD and 38 (16%) of them inserted the IUCD within two weeks. Our project was able to increase the usage of IUCD among diabetic women in nine Perlis health clinics from 3 (0.3%) to 38 (3.4%) within six months. There was a gap reduction in achievable but not achieved (ABNA) from 9.7% to 6.6%. [ABNA = Achievable benefit not achieved]

Low usage of IUCD among diabetic women is a challenging issue and patient refusal to use IUCD, lack of husband support and comfortable with the previous contraception method were among the main contributing factors. However, providing continuous awareness and new process of effort in promoting the usage of IUCD among diabetic women do improve the uptake of the approach.

KEYWORDS: IUCD (intrauterine contraceptive device)**,** reproductive diabetic women, contraception

Problem

Pregnant women with diabetes mellitus pose an increased risk of maternal morbidities such as pre-eclampsia, placenta abruptio, polyhydramnios and preterm labour. Such cases had been identified in our monthly maternal and perinatal mortality review at the Perlis state level from January to December 2016. One of the proven interventions for this problem is patient empowerment through the usage of long-term contraception until the patient diabetic parameter improved prior to their conception (1).

Based on the contraception card review, only 3 (0.3%) women with diabetes in Perlis were using IUCD in 2016. The remaining 1,111 (97.7%) diabetic women either practised other methods of contraception or did not use any contraception. This showed that IUCD usage among diabetic women in Perlis was very low and an intervention is needed. Multiple factors can contribute to the low IUCD usage among diabetic women such as lack of knowledge among healthcare providers, lack of referral by nurses to medical officers, and patient refusal of IUCD insertion.

According to the World Health Organization Medical Eligibility Criteria (WHO MEC 2008), IUCD is a well-known first line recommendation for contraception among diabetic women. IUCD is a non-hormonal contraception method that had been proven to not affect lipid metabolism and glucose homeostasis in diabetic women unlike hormonal contraception (2).

Unfortunately, in Perlis, most women with diabetes mellitus were not using IUCD as their main contraceptive measure. According to the National Diabetic Registry System (NDR) data in 2016, 15,868 registered diabetic women had attended health clinics in the past seven years in Perlis (2009-2016). In 2015, of those who registered, only 6,545 (41.2%) diabetic women were still on an active follow-up of which 1,114 (17%) were of reproductive age of 15 – 45 years, distributed unequally in all nine of Perlis health clinics.

This project aims to improve the percentage of IUCD usage among diabetic women to 10% within the 1-year period and ultimately reduce maternal diabetic morbidity and mortality.

Background

Globally, the average percentage of women of reproductive age who used IUCD was 14.3%. However, in some countries, the percentage of women using IUCD is less than 2%, whereas in other countries, it is more than 40% (3). Good knowledge and skills among healthcare providers, positive religious belief towards IUCD, and local guidelines that prioritised the usage of IUCD were among the main contributing factors reported in countries with high usage of IUCD.

Another systematic review in 2007 by Kai J Buhlinga et al. showed that healthcare providers' attitude and knowledge had a strong influence on the rates of IUCD usage (3). The likelihood of a healthcare provider prescribing IUCD depended on many factors including the providers' knowledge base and whether they had received appropriate training on placement or removal techniques and patient counselling. Several misperceptions remain among healthcare providers regarding the efficacy and safety of IUCD and the types of women for whom it is unsuitable. The degree to which these misperceptions curtail IUCD usage in individual countries may depend on the persistency of these misperceptions and the success of the educational programmes in dispelling them. Family planning experts in the US, for example are actively addressing the misperceptions among women and healthcare providers regarding IUCD safety and the unsuitability of this method for certain groups of women. This review also showed that in practice, factors such as geographic differences, government policy, and the healthcare providers' educational level influenced the use of IUCD more than medical eligibility criteria (3).

Another study cited that the main reasons married women were not using IUCD include the usage of another method of contraceptive (93.3%), development of side

effects (3.9%), absence of husband's permission (1.6%), medical problems and non-availability of service (1.3%) (4). The study found out that 126 (45%) of the married women were in the category of low knowledge, followed by high knowledge 137 (31.1%) of IUCD, whereas the remaining (23.7%) had moderate knowledge. The results of regression analysis also showed that women who had high knowledge of IUCD were eight times more likely to practice IUCD as compared to those with low knowledge.

There are several methods of contraception appropriate for diabetic women and the selection should be based on the criteria such as patient diabetic status, complications and diabetic age up to date as outlined by WHO Medical Eligibility Criteria (MEC 2008) (2).

A systematic review conducted in the US in 2013 concluded that at that time, IUCD was the most effective method to reduce the rates of unwanted pregnancy (1). The review also confirmed that there were sufficient well-controlled studies to conclude that both the copper-bearing and Levonorgestrel IUCDs are effective and safe for women with DM1 or DM2.

The US and the UK have already recognised the need to increase IUCD use and had developed national evidence-based guidelines and training on IUCD to healthcare providers. Following the implementation of the strategies, the IUCD use in these countries increased to 40% in 2013 (3).

Measurement

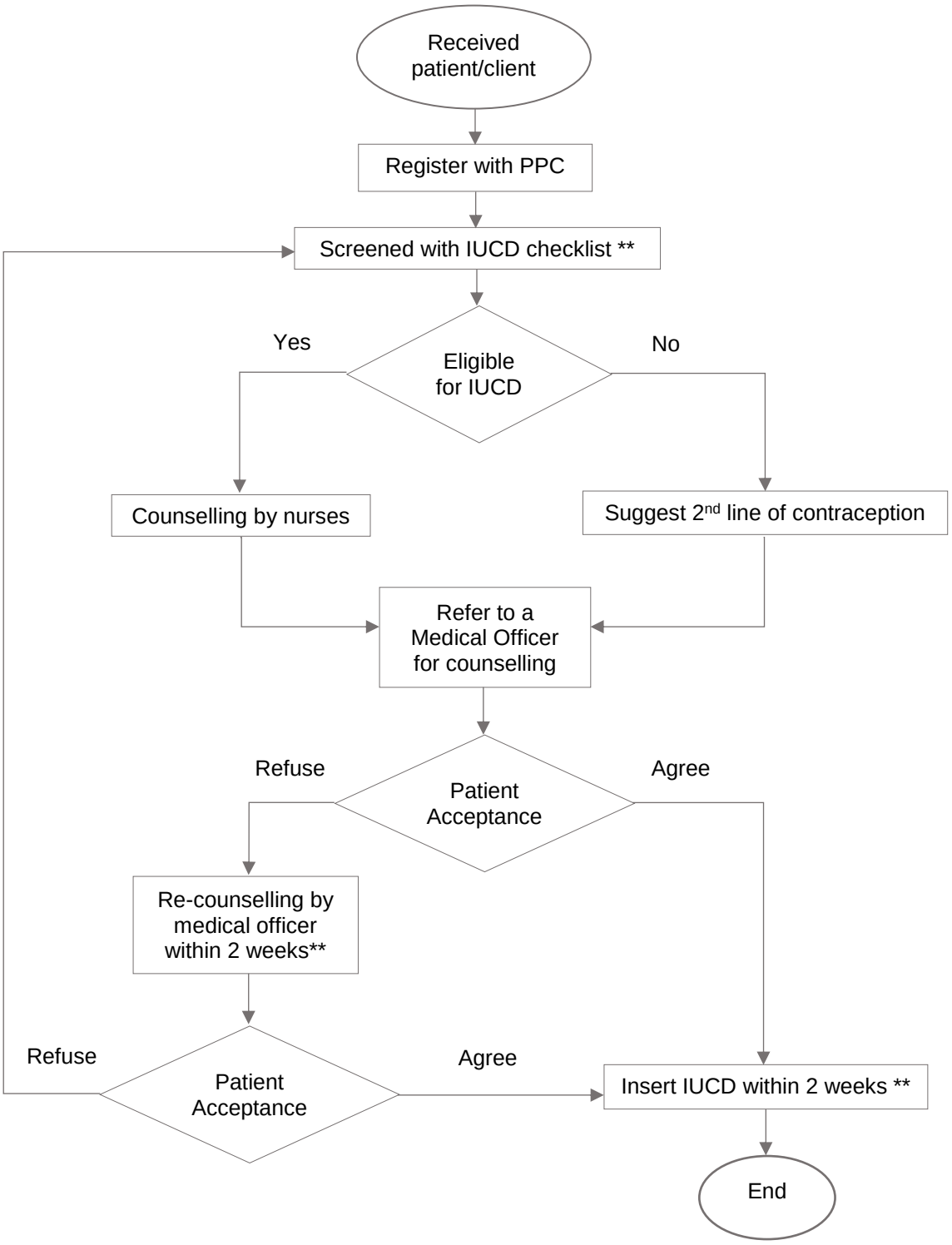
The verification study took place from December 2015 to March 2016. Identification of reproductive diabetic women was based on the National Diabetic Registry (NDR) where their contraception cards were retrieved from the respective clinics to obtain information on the IUCD usage. We found that of the 1,114 reproductive diabetic women registered in Perlis, only three of them used IUCD as a contraception method. We also found out that the percentage of diabetic women registered with PPC was low at 379 (34%) with those referred to the medical officers for IUCD counselling being even lower at 28 (7.3%).

To meet the aim of our project in improving IUCD use among diabetic women, we set a target of 10% based on a study carried out in the US (2012), where 12% of women using IUCD in which maternal morbidity or mortality had been markedly reduced (5).

The referral and screening standards of data were collected monthly and the final target achievement of data was calculated every six months.

Initial Assessment of the Problem

The existing process of care was reviewed and a few critical steps were identified and added to emphasise on the importance of screening all diabetic women using a new comprehensive IUCD checklist (Figure 1). The IUCD checklist had two major components with eight questions in component A (history-taking) and two questions in component B (speculum examination) to be used during the screening process by a medical officer. Next, the women will undergo speculum examination (component B) to look for any abnormality of the cervical or adjacent area. Eligible women were those with no contraindications as listed in component A and component B. Then, the women accompanied by their husbands will be referred to nurses and medical officers in the clinics for further counselling. IUCD procedure would be carried out on the same day or within two weeks' time for women who agreed to the procedure. For those who refused, a follow-up session will be arranged in two weeks whereby another counselling session will be given to convince the women of the benefit of IUCD.



** added critical steps

Figure 1: Process of care of IUCD intervention in diabetic women.

We performed a cross-sectional survey using structured questionnaires among 100 reproductive diabetic women who enrolled in the National Diabetic Registry and on active follow-up from 2015 to 2016 to assess their knowledge, attitude and practice of the contraception methods. The questionnaire was developed in April 2016, which was validated by two experts. Following this, a pilot study was carried out among 30 diabetic women from a health clinic in Perlis. The questionnaire was divided into two main sections, which included 13 questions on Knowledge, Attitude and Practice (section A) and 10 questions on factors contributing to low IUCD usage (section B). In both sections, two points were awarded for each correct answer and 0 point for incorrect answers. SPSS version 21.0 was used to analyse the data.

The majority (83%) of the respondents were at the age of 24 – 40 years old, with the median age of 37.0 years and three-quarters of the respondents (74%) were Malays (Table 1). Fifty four (54%) subjects were housewives. Most of the participants, or 97 (97%) had formal education and only three (3%) did not receive any formal education. Nearly half (48%) of the women were employed, mostly as government workers. From this study, about nine (9%) of the respondents had good knowledge (score >12), 34 (34%) of them had moderate knowledge (score 8–12) and 57 (57%) of them had poor knowledge of IUCD (score <8). Knowledge level among respondents for individual questions was shown in Table 2. We also found that 86 (86%) of the women who refused IUCD were due to lack husband support, 23 (27%), issued with religious belief, 17 (20%), and comfortable with the current contraceptive method, 46 (53%).

Table 1: Characteristic of respondents (n=100).

No	Characteristics	Frequency (%)
1	**Occupation**	
	Government Worker	30 (29.7%)
	Non-Government Worker	16 (15.8%)
	Housewife	54 (52.5%)
2	**Educational Level**	
	No Formal Education	3 (2.25%)
	Primary School	16 (15.8%)
	Secondary School	61 (59.7%)
	University/College	21 (18.8%)
3	**Age of Marriage**	
	1-2years	16 (15.8%)
	3-4years	8 (5.9%)
	>5years	77 (76.2%)
4	**Race**	
	Indian	5 (5.0%)
	Chinese	10 (9.9%)
	Malay	77 (74.3%)
	Other	9 (8.9%)
5	**Age**	Median 37.0

Table 2: Knowledge level among respondents (n=100).

Questions	Correct Answer n (%)	Incorrect Answer n (%)	Unsure n (%)
IUCD is not suitable for women with pelvic inflammatory disease	21 (21%)	10 (10%)	69 (69%)
IUCD can cause cancer	37 (37%)	53 (53%)	10 (10%)
Fertility of Diabetic Women who use IUCD will not be affected after IUCD removal	29 (29%)	19 (19%)	52 (52%)
IUCD usage will not affect sexual activity	36 (36%)	12 (12%)	52 (52%)
IUCD will be able to prevent unwanted pregnancy for 3 years	16 (16%)	8 (8%)	76 (76%)

The second part of the study involved the assessment of the quality of treatment given and case management. This was done through a review on the documentation of the contraception care by a medical officer to a sample of 10 contraception cards for each clinic using the checklist guide developed by a family medicine specialist on April 2016. From this review, 56 (56%) contraception cards with non-optimised case management were detected.

The third part of the study involved a survey on the knowledge of IUCD among 135 healthcare providers using the validated questionnaires. From this study, we found that 22 (22%) of the total respondents had good knowledge (score >8), 71 (71%) of them had moderate knowledge (score 4–7), and only 7 (7%) of them had poor knowledge about IUCD (score <4).

Strategy

Two separate customised training sessions were organised, tailored for nurses and doctors. This strategy was implemented to ensure that all healthcare providers are equipped with the essential knowledge and skills on IUCD insertion.

Two workshops for doctors were conducted in early June 2016, which were attended by 46 doctors from nine health clinics. The focus of the workshops was on knowledge enhancement and also the IUCD insertion skill-building. The evaluation of IUCD insertion procedure (OSCE-oriented) was led by two obstetricians. During the workshops, all doctors were also taught on the best counselling method for the husbands.

The second training session comprised three workshops begun in mid-June 2016. The project team, a matron and three staff nurses assembled a group of 235 nurses who were responsible for delivering personalised care at their respective health clinic. They were briefed on the proper IUCD counselling, the importance of diabetic women to be registered in a pre-pregnancy programme or contraception care and referral cases to medical officers.

For the second strategy, a quick reference for IUCD was developed by a team that consisted of eight team members who were doctors, matrons and nurses with additional two specialists of family medicine in June 2016. This quick reference for IUCD counselling highlighted three major components including the impact of diabetes on pregnant women and babies, benefit of IUCD during pre-pregnancy, and correction of misconception towards IUCD. This quick reference was disseminated to all healthcare providers (nurses and doctors) in early August 2016. Trained nursing manager and supervisor from each health clinic monitored and supervised the use of this reference. Briefing about the new quick reference was carried out for both nurses and doctors in the training sessions as mentioned earlier. Continuous briefing sessions were conducted

weekly within two months to cover all healthcare providers. The training sessions provided adequate knowledge for the staff to counsel the mothers during individual counselling and open talk at the clinic's waiting area.

Finally, the revised process of care was integrated into the Maternal and Child Health State Plan of Action 2016 to standardise the practices in contraception care in Perlis, assisted in data collection and eased the supervision of quality improvement initiative.

Results

Remedial measures were completed in December 2016 and were evaluated in January 2017. The registration of diabetic women into PPC had markedly increased to 610 (54%) within six months from the previous 379 (34%) of PPC registration. IUCD counselling referral to medical officer also increased to 244 cases (79%) compared to only 28 cases (7.3%) in the pre-remedial phase.

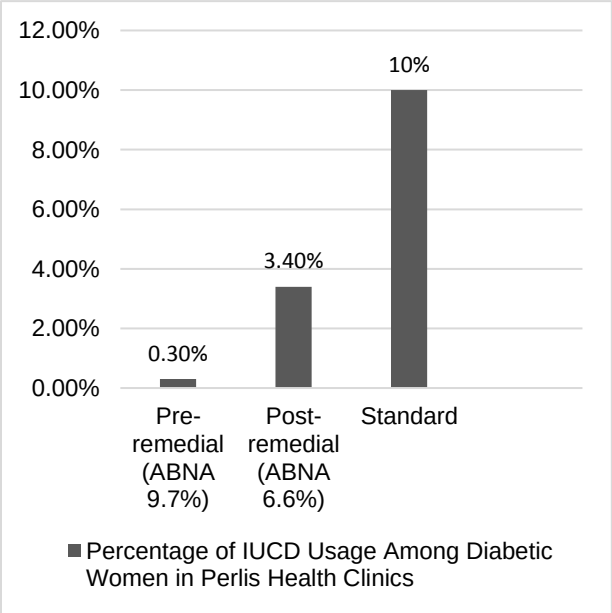
Further analysis showed that out of 244 diabetic women who had undergone counselling, 44 (18%) of them agreed to use IUCD and 38 (86%) of them inserted IUCD within two weeks. Our project was also able to increase the use of IUCD among diabetic women in the nine Perlis health clinics from three diabetic women (0.3%) to 38 diabetic women (3.4%). Our team project reduced ABNA (achievable but not achieved) from 9.7% to 6.6% (Figure 2).

In the post remedial phase, similar KAP questionnaires were distributed to another 100 respondents who received interventions. From the post-remedial study, patient refusal to the IUCD insertion, 86 (86%) was noticeably reduced to 36 (36%). Factors for patient refusal of IUCD among the 36 respondents (Figure 3) included lack of husband support, 11 (31%), comfortable with the previous contraception method, 17 (47%), and the issue of religious belief, eight (22%). With regards to their knowledge of post-remedial, we found that about 49 (49%) of the respondents had good knowledge (score >12), 28 (28%) of them had moderate knowledge (score 8–12) and 23 (23%) of them had poor knowledge of IUCD (score <8).

In addition, we also found that post remedial non-optimised case management issue for all diabetic women who visited the clinic decreased from 56 (56%) to 17 (17%).

Furthermore, post-intervention survey among 112 healthcare providers on their knowledge of IUCD shows an improvement with 90 (80%) of the respondents had good knowledge (score >8), 16 (14%) of them had moderate knowledge (score 4–7) and only 6 (5%) of them had poor knowledge of IUCD (score <4).

Figure 2: IUCD use among diabetic women in Perlis.



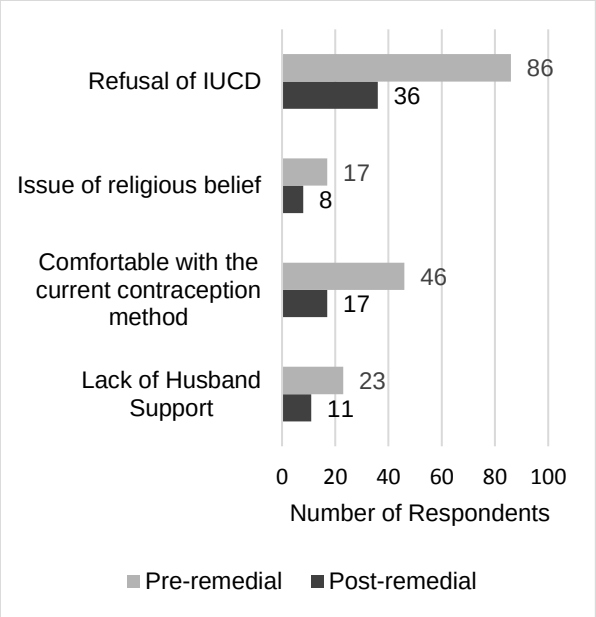


Figure 3: Contributing factors for low usage IUCD (pre and post-remedial).

Lessons and Limitations

This project aims to improve IUCD use among diabetic women in Perlis. Continuous and effective communication about family planning and IUCD between healthcare providers and all diabetic women attending health clinics is the main focus. For this to be achieved, we successfully designed and implemented a quality improvement measure and system that suited the health clinic environments and for better patients' cooperation for IUCD counselling, insertion and follow-up.

Our project also emphasised on continuous monitoring and staff supervision for practices in IUCD counselling. A target has been given to each healthcare provider for IUCD insertion and counselling in order to continuously motivate them. We also focused on periodic healthcare provider training sessions and the application of skills with knowledge.

However, despite the initial enthusiasm, we encountered some problems during the implementation of the new system. Monitoring the husbands' participation and support is another challenge that we had not addressed in this project.

Besides that, we did not assess diabetic women comprehension after they received counselling from healthcare providers by using the new quick reference guide. The level of comprehension of these diabetic women should be studied in the future and further review of the quick reference and counselling context might be needed.

Conclusion and the Next Steps

Low usage of IUCD among diabetic women is a problem, and patient refusal of IUCD was identified as the main reason. With continuous training for the healthcare providers, patient education and promotion, misconception correction, and the enhancement of a new process of care among our nurses and doctors, the usage of IUCD have been successfully increased from three (0.3%) to 38 (3.4%). Nevertheless, there is still more room for improvement as the achievement of the first cycle was still below the standard set, which was 10%. Continuous training of the healthcare providers will improve the quality in the educational session of diabetic mothers and ultimately ensure the sustainability of better IUCD uptake among them.

The next step would be to ensure continuous training sessions to all healthcare providers through seminars and hands-on for the three health clinics identified in our study that had the most healthcare providers with low and fair knowledge. Additionally, we plan to create an IUCD teaching model on the IUCD insertion procedure via innovation in the future for a demonstration session during patient counselling. This will help to improve patients' understanding of the IUCD insertion procedure and alleviate their fear towards the procedure. Methods to monitor the husbands' participation and support also need to be explored. Also, a mechanism would be put in place to ensure proper counselling for all diabetic women at all times.

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Conflict of Interest

None

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None

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