

# Oral Care for Frail Elders: Knowledge, Attitudes, and Practices of Long-Term Care Staff

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**Abstract:** The University of British Columbia Geriatric Dentistry Program (GDP) offers dental services and provides a comprehensive in-service education program for nursing and residential care-aide (RCA) staff in the provision of daily mouth care for elders in various long-term care (LTC) facilities in Vancouver. This study examined the general impact of the education initiative at one LTC site. A survey (N=90), semi-structured open-ended interviews (N=26), and product audits were conducted to 1) examine the impact of the GDP education initiative on the level of knowledge, attitudes, and practices of RCAs and nursing staff regarding the provision of daily mouth care; 2) identify the enablers and barriers that influenced the provision of daily mouth care practices, policies, and protocols using the PRECEDE-PROCEED model of health promotion research; and 3) assess the self-perceptions of RCAs and nursing staff members regarding their oral health. A knowledge gap was evident in some key areas pertaining to prevention of dental diseases. Twenty-five percent of residents were missing toothbrushes and toothpaste for daily mouth care. Residents who exhibit resistance to mouth care tended not to receive regular care, while issues such as time, increased workload, limited staff, and the lack of an accountability structure are disabling factors for provision of daily mouth care. Results suggest that the impact of educational interventions is affected by the quality of in-service education, an absence of identified predisposing, reinforcing, and enabling factors, and a strong commitment among LTC staff to the provision of daily mouth care for frail elders.

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The poor oral health of older people generally and frail elders<sup>1</sup> in particular is of growing concern in many countries.<sup>2-9</sup> The Elders' Oral Health Summit held in 2004 and related proceedings published in the *Journal of Dental Education* provide a comprehensive overview of the state of the science in access to and outcomes of care for institutionalized elders.<sup>10</sup> Most elders residing in long-term care (LTC) facilities are frail and functionally dependent on others (LTC staff, family members, and health care providers) for personal care needs and activities of daily living. Elderly people living in LTC facilities are at an increased risk for caries due to a diet high in refined carbohydrates together with inadequate daily mouth care, xerostomia due to medications, and a lack of access to dental care.<sup>11,12</sup> Untreated oral diseases have a negative impact on residents' quality of life and general health.<sup>13-15</sup> In addition to the medical determinants (e.g., chronic disease and

disability), social determinants (e.g., access to care, attitudes of health professionals, and socioeconomic factors) have a significant impact on oral health outcomes but receive little attention in planning for oral health care for the elderly.<sup>16-18</sup> The ELDERS (Elders Link with Dental Education, Research, and Service) group at the University of British Columbia (UBC) was one of the first to document the distribution of oral health problems in LTC facilities and to explore ways of managing the problems.<sup>19</sup>

In 2002, the ELDERS group introduced the Geriatric Dentistry Program (GDP) as a joint venture with Providence Health Care (PHC) for the provision of dental services to elders in LTC facilities. The program is also committed to addressing the broader determinants of oral health through in-service education and research. In-service oral health education is aimed at hospital nursing and care-aide staff, residents, and their families. A GDP oral health

educator (a dental hygienist with added qualification for providing oral health care in residential settings) trains nurses and residential care-aides (RCAs) to provide daily mouth care and to recognize abnormalities in the mouth. The educator spends three hours a month on average at each LTC facility, working with the staff to review hospital protocols, recommend oral hygiene products, provide in-service education, and provide hands-on support for the provision of daily mouth care for residents. Mouth care guidelines and protocols include a nursing assessment form for description of oral conditions and algorithms for routine and specialized mouth care, along with basic mouth care facts for families of residents. Each LTC facility receives a “Daily Mouth Care” educational package that includes a teaching manual, a PowerPoint Presentation, and an interactive CD-ROM. The goal of the educational program is to ensure effective mouth care for frail elders in the hopes of ensuring a better quality of life by reducing the incidence of oral diseases. It is important to note, however, that the RCAs and nurses are not obliged by the terms of their employment to participate in the education program; it is voluntary. Even if the RCA and nursing staff do not participate in the educational program, they are still responsible for providing daily mouth care for residents.

The study was carried out at one of six Providence Health Care sites in British Columbia.

The purposes of this study were to 1) examine the impact of the GDP education initiative on the level of knowledge, attitudes, and practices of RCAs and nursing staff regarding the provision of daily mouth care; 2) identify the enablers and barriers that influenced the provision of daily mouth care practices, policies, and protocols using the PRECEDE-PROCEED model of health promotion research;<sup>20</sup> and 3) assess the self-perceptions of RCAs and the nursing staff regarding their oral health. The PRECEDE-PROCEED model has been used previously in dentistry to provide a framework for designing, implementing, and evaluating oral health promotion programs and for assessing dentists’ knowledge, opinions, and practice.<sup>21-23</sup> PRECEDE is an acronym for Predisposing, Reinforcing, and Enabling Constructs in Educational Diagnosis and Evaluation. PROCEED is an acronym for Policy, Regulatory, and Organizational Constructs in Educational and Environmental Development, and it provides a framework that guides the implementation and evaluation of health promotion initiatives that use PRECEDE.<sup>20</sup>

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## Methods

The research protocol was reviewed and approved by the Ethics Review Boards at Providence Health Care, the University of British Columbia, and Simon Fraser University. A mixed methods strategy was implemented to gain an in-depth understanding of the perceptions, knowledge, attitudes, and practices of LTC staff regarding the provision of daily mouth care.<sup>24</sup> Mouth care product audits, surveys, and semistructured, open-ended interviews facilitated data collection. Results were triangulated when interpreting findings.

Two mouth care product audits were conducted during the study to determine the extent to which GDP practice guidelines and protocols are being followed. As per the GDP protocol, product audits are usually conducted twice per year. The audits were conducted by one of the investigators (KJ) as part of the GDP protocol agreed to by the LTC facility. This process included a visit to each resident’s room in the facility to look for the presence of a bedside mouth care card that indicates the resident’s dentate status (presence of natural teeth and/or dentures), availability of appropriate dental products (toothbrush, toothpaste, denture cups, etc.), and product labeling and storage.

A survey was designed based on the existing mouth care protocol and information on the GDP oral hygiene educational manual.<sup>25</sup> The response format on the survey included seven multiple choice questions, seventeen Likert items, and ten open-ended questions to gather information on RCAs’ knowledge, attitudes, and practices regarding the provision of daily mouth care, including their opinions regarding GDP education in-service programs. The first draft of the survey instrument was pretested on twenty RCAs at a different LTC facility and subsequently revised for clarity. All of the RCAs at the study facility were invited to participate in the survey.

Semistructured, open-ended interviews were conducted by KJ with individual participants, using purposeful sampling with an inclusion criterion of past participation in the GDP education program. The sample consisted of twenty-six participants: eighteen RCAs, three registered nurses, three clinical nurse leaders (CNLs), the facility’s director of care, and the GDP oral health educator. Open-ended questions prompted discussions on topics related to the GDP education program, current practices and protocols

regarding the provision of daily mouth care for residents, availability and usage of the dental products provided, personal views and practices regarding daily mouth care, the staff's administrative structure, and concerns and suggestions regarding the GDP in-service education program.<sup>26</sup> The interviews, audit, and survey results served to provide an insight into the knowledge, opinions, and practices of the study participants in relation to the provision of daily mouth care at the LTC facility.

Surveys and audits were analyzed using descriptive statistics in SPSS and Excel respectively. Cross-tabulations, frequencies, and percentages were used for analysis. The interviews were recorded and transcribed verbatim for analysis.<sup>27</sup> Thematic analysis following an iterative process of induction and deduction provided a constructive and insightful method for organizing and exploring the verbatim transcriptions. Themes were grouped under the PRECEDE-PROCEED categories of predisposing, enabling, and reinforcing factors to highlight the influences, opinions, and practices regarding the provision of daily mouth care.

## Results

Ninety RCAs participated in the survey, which was a response rate of 75 percent. Among the RCAs who completed the survey, 73 percent had not participated in the GDP educational in-service programs, and 27 percent had participated. Table 1 depicts the RCAs' work experience and workload and the residents' ability for self-care. Nearly 69 percent of RCAs reported that they had more than five years of work experience as an RCA. Seventy-eight percent of the RCAs had been working at the study facility for more than two years. Most (80 percent) RCAs recognized providing daily mouth care as part of their duty, but they indicated (in interviews) that a heavy workload and challenges posed by residents who resisted care due to physical and cognitive impairment prevented the daily provision of mouth care. Each RCA, on average, was responsible for seven residents per eight-hour shift; of the seven residents, at least three of them could perform their own mouth care.

**Table 1. RCAs' work experience, workload, and perception of residents' ability to perform their own mouth care**

	Responses	Number (%)
Work experience in the profession as a care-aide (mean=5.044, SD=2.10890)	Less than one to 2 years	17 (19%)
	2 to 5 years	11 (12%)
	5 to 15 years	41 (46%)
	15+ years	21 (23%)
Work years at the facility (mean=4.5, SD=2.03)	Less than one to 2 years	20 (22%)
	2 to 5 years	18 (20%)
	5 to 15 years	41 (46%)
	15+ years	11 (12%)
In a normal shift, number of residents cared for (mean=7)	6-8 residents	88 (98%)
In a normal shift, number of residents who do their own mouth care	1-3 residents	67 (74%)
	4-7 residents	4 (4%)
	Assignment-dependent	7 (7%)
In a normal shift, number of residents who need help with mouth care and are cooperative	2-4 residents	54 (60%)
	5-7 residents	23 (26%)
	Assignment-dependent	7 (8%)
	1 resident	6 (7%)
In a normal shift, number of residents who are not cooperative	0 residents	9 (10%)
	1-3 residents	45 (61%)
	4-6 residents	18 (20%)
	Assignment-dependent	7 (8%)
Who is responsible for daily mouth care of the resident?	Care-aide	73 (80%)
	Care-aide and family	9 (10%)

Note: Data from survey of residential care-aides (RCAs), with 90 respondents. Missing data and data for values less than 2% are not presented.

Of the RCAs surveyed, 77 percent self-assessed their knowledge about mouth care to be adequate, yet only 27 percent had participated in the GDP in-services. There was no statistical difference in the knowledge between those who had participated in the GDP in-services and those who did not. However, a knowledge gap regarding provision of oral care for residents was evident among all of the RCAs in several key areas: 32 percent believed incorrectly that toothbrushing is not necessary to remove dental plaque; 51 percent had the mistaken impression that tooth loss is a natural process; and 72 percent held the mistaken belief that mouth care cannot be provided to unconscious residents.

There was also no significant difference observed between the attitudes of those who participated in the GDP in-services and those who did not. Participants considered it important to wear gloves while providing mouth care (100 percent), to clean dentures after every meal (80 percent), to check residents' mouths on a daily basis (75 percent), and to have available a mouth care card near the resident's bed for quick reference (70 percent). However, there was a prominent disconnect between RCAs' beliefs and practices, which was made explicit in the interviews and the audit results. For example, although 70 percent of the RCAs considered it important for residents to have a bedside mouth care card, the audit showed that only 22 percent of residents actually had a card posted (Table 2). Over 70 percent of the RCAs said it was important to check the resident's mouth on a daily basis and over 90 percent believed that daily oral hygiene improves quality of life, yet only 29 percent agreed that residents should receive mouth care on a daily basis. (These data were obtained from other survey questions, not presented in the tables.) In the interviews, several RCAs reported that residents who exhibited resistance to mouth care

were given least priority by the RCAs when assisting with activities of daily living.

Product audit results (Table 2) revealed that 78 percent of the residents did not have a mouth care card as required; 25 percent were missing toothpaste and a toothbrush; nearly 40 percent of mouth care products were found in unhygienic locations in common drawers with other personal belongings like wash basins, suppository and rash ointments, razors, hair combs, socks, and other personal items; and 90 percent of the products were not labeled with the resident's name, thereby resulting in a mix-up of mouth care products, including toothbrushes and dentures, between residents.

Interview findings from each of the twenty-six semistructured, open-ended interviews, are organized into predisposing, reinforcing, and enabling factors (Figure 1) and provide additional insight into the survey results. The comments and perspectives described below reflect the composite views of the RCAs, nurses, CNLs, director of care, and oral health educator.

## Predisposing Factors

Predisposing factors include the knowledge, attitudes, beliefs, values, and perceptions that facilitate or hinder the provision of daily mouth care. The knowledge required by the RCAs and nurses through the GDP educational in-services and their expectations regarding further training for the provision of daily mouth care are predisposing factors. Three out of six nurses, three nurse leaders, and five out of the eighteen RCAs indicated that mandatory attendance at in-service sessions would be required to address issues around a gap in knowledge. They also suggested that more frequent in-service sessions were required and that sessions should be scheduled during times when RCAs are not busy attending to resident

**Table 2. Daily mouth care audit for the facility, July 2006**

	Floor 1	Floor 2	Floor 3	Total	Total as a % of Residents
Beds	71	74	75	220	
Residents	69	70	72	211	
Mouth care cards	22	13	11	46	22%
Toothbrush	50	57	50	157	74%
Toothpaste	50	58	50	158	75%
Denture brush	13	09	14	36	17%
Dependent residents	40	47	54	141	67%

Note: The study facility had three floors. Each floor had more than 70 resident beds.

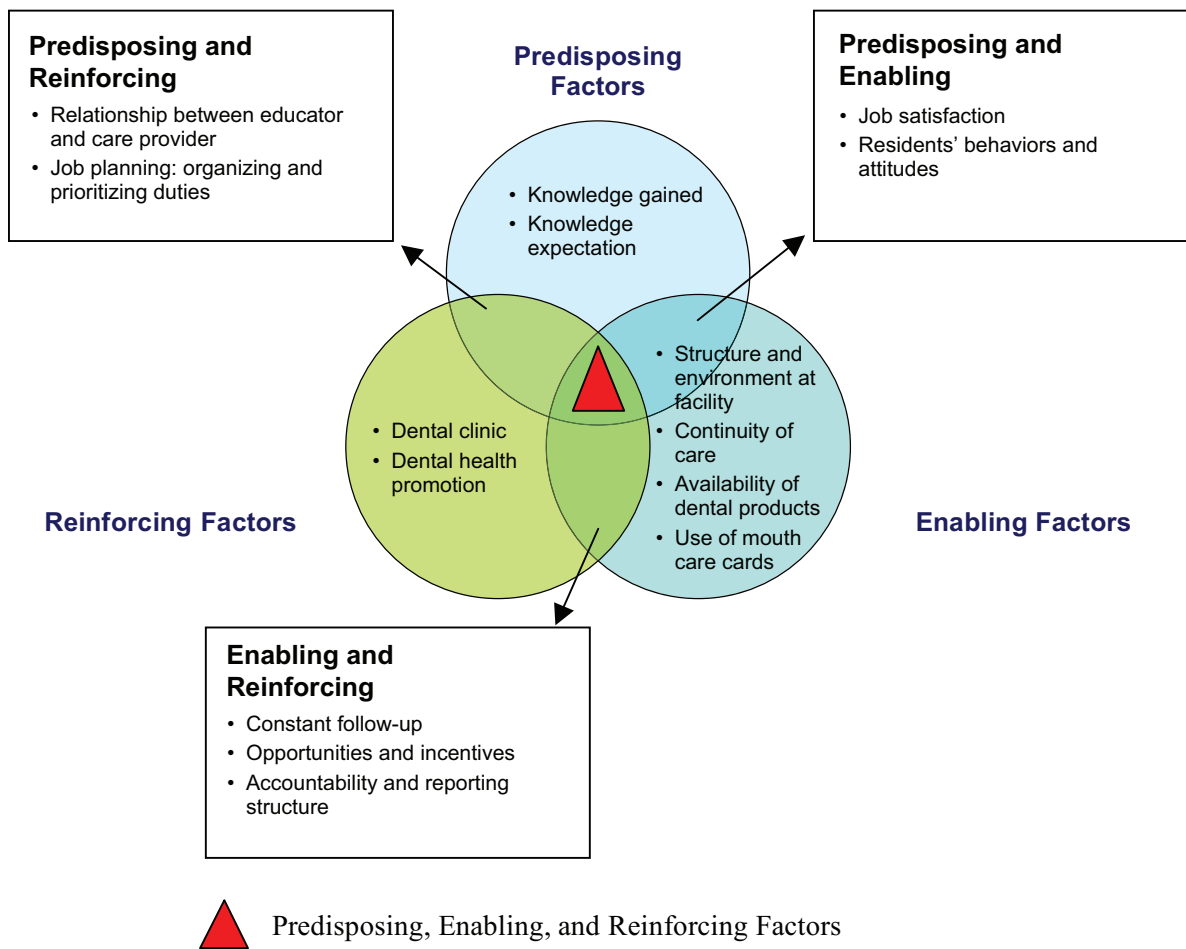


Figure 1. Framework based on PRECEDE model

needs. The following comment by one of the RCAs highlights the general consensus on related issues: “It’s been a long time since I attended an oral care education session; I don’t remember.”

At least seven RCAs and all of the nurses who were interviewed and who had participated in the GDP education program pointed out explicitly that it was difficult to apply what was being taught, particularly when dealing with cognitively impaired and noncooperative residents. As one of the nurses summarized, “We know mouth care seems easy to do, but it is not easy to do for patients who refuse to open their mouth or they spit or bite.” One of the RCAs stated what other RCAs confirmed: “If I have difficulty convincing them to open their mouth, I cannot clean their teeth and I need help, but if no one is here to help and I have no time, I just leave it.” Nevertheless, a number of participants (eleven RCAs,

four nurses, two CNLs, and the director of care) said they realized that an increasing number of residents being admitted to LTC facilities retain more teeth than those who were admitted a few years ago, and therefore expressed their need for further and ongoing training. As one interviewee said, “Patients coming in [the past] had dentures [but] now [many have] teeth, so we need more knowledge and skills.”

At least six of the RCAs revealed that some of them considered providing mouth care to be a particularly repulsive task to perform. They said they would rather clean up after bowel movements or attend to urinary incontinence accidents than brush a resident’s teeth. The GDP oral health educator confirmed, “Some of them tell me that they don’t mind attending to other duties related to daily living, like cleaning up after incontinent patients, but some of them simply dislike brushing [residents’] teeth.”



## Reinforcing Factors

Reinforcing factors include incentives and feedback learners receive from others that may encourage or discourage a certain behavior. A stimulating education session that created nonthreatening opportunities to discuss challenges around mouth care with dental professionals was seen as reinforcing by the CNLs and the director of care. One of the CNLs stated that providing material incentives (prizes) for RCAs during education sessions was seen as an enabling and a reinforcing factor: “Most of the care-aides come with only a high school education; incentives or some sort of token of achievement on completion of training makes them feel responsible and challenged for a given task.”

Establishing better accountability and reporting structures was also proposed as a means to ensure the provision of continuous care. Some participants suggested having a dental hygienist/educator on site on a daily basis as a resource person and establishing an enforceable protocol and standards for daily mouth care. One CNL said, “I think there should be a better and more effective accountability structure in place. We would like to encourage the staff to delegate or report about the work that they were unable to complete in their shift, to those [RCAs and nurses] replacing them.”

The GDP oral health educator expressed the opinion that RCAs who are less likely to take care of their own mouths are also less likely to be motivated or willing to provide daily mouth care for residents, particularly when faced with the challenges of workload and lack of time and skills. Personal daily mouth care and awareness of its impact on quality of life were identified as key reinforcing factors, in addition to the other factors outlined in Figure 1.

## Enabling Factors

Enabling factors include skills, resources, or barriers that help or hinder the provision of daily mouth care. A number of RCAs (eight), nurses (five), and CNLs (three) indicated that gaps in knowledge discouraged the provision of care or resulted in the delivery of inappropriate care. For example, uncertainty around the use of denture cleansing tablets or a lack of immediate guidance for responding to emerging issues, such as addressing difficulties providing mouth care due to a gag reflex, resulted in RCAs' and nurses' experiencing diminished confidence and increased anxiety resulting in not providing mouth care. “I am scared now,” admitted one interviewee.

“I once tried cleaning [the resident's] tongue and he started coughing and started gagging.” Another said, “We're hesitant to go ahead with cleaning [residents'] tongue or brushing teeth for those [residents] who have loose teeth or a bad gag [reflex]. If the resident's gum bleeds, we don't know what to do.”

A lack of knowledge and time were said to often lead to practices that were unsafe and contrary to the GDP protocol. For instance, nurses and RCAs are instructed not to insert their fingers into a resident's mouth because of the risk of being bitten. Some RCAs and nurses did not follow this protocol because of time constraints. As one said, “There is this time factor, [so] at times I slide my finger through the corners of the [resident's] mouth and quickly sweep it with a towel.”

The use of toothettes (soft sponge-tipped mouth cleaners) is contraindicated because of the increased risk of aspirating small pieces of sponge that break off. However, some RCAs (N=15) and nurses (N=3) reported ignoring this protocol in the interest of utility and time. As one interviewee said, “Those pink things [toothettes] were very good and easy, but they [dental staff] took it away, [so] we ask [the resident's] family to get it.”

Most of the participants acknowledged that the absence of a standard storage location and an identity tag/label on toothbrushes and dentures created difficulty in locating appropriate products for a specific resident. This led to either failure in providing daily mouth care, mixing toothbrushes between residents, or the wasteful practice of discarding products altogether. As one of the RCAs pointed out, “At times we cannot find their toothbrush; it's mixed up. Sometimes the patient leaves the denture on the table, and we don't know whose denture it is so we just guess.” Mixing toothbrushes and dentures between residents raised a particularly serious concern among the CNLs we interviewed. They recognize this practice places residents, many of whom are immune-compromised, at an increased risk for infection.

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## Discussion

The findings of this study were shared with the GDP oral health educator and other GDP-affiliated dentists and dental hygienists who provide dental services to residents at the various PHC sites and other LTC facilities. There was strong consensus among the GDP oral health educator and the GDP-affiliated dentists and dental hygienists that the findings

and related issues were not exclusive to the facility studied. Similar situations have been observed at other LTC facilities.

Based on the key findings of this study, the GDP team is working collaboratively with LTC staff to respond to the following issues: how to better prepare LTC staff to provide mouth care to cognitively impaired and noncooperative residents; why some LTC staff feel that providing mouth care is repulsive compared to assisting with other activities of daily living; how to design a constructive reporting and accountability structure; how to help LTC facilities deal with concerns about workload and time constraints that either result in inappropriate and unsafe practices or prevent the provision of daily mouth care altogether; how to engage LTC facilities better to follow the GDP protocol around availability of mouth care cards and essential mouth care products; and how to enhance the quality of the in-service education program.

The quality and format of the oral hygiene in-service education that was provided at the LTC facility are potential contributors to the findings. The GDP oral health educator realizes that well-delivered professional education in work settings can be effective if it is primarily hands-on, but poorly delivered instruction, especially if it is primarily lecture-based, rarely does. Moreover, enduring behavior change is a long-term iterative process that requires the individual to establish achievable goals in a supportive and enabling environment.<sup>28</sup> For RCAs and nursing staff to make the provision of daily mouth care a consistent part of their daily caregiving activity, it is imperative that the staff are not only well equipped with skills and knowledge but also have the opportunity to participate actively in decisions that can be seen as barriers to implementing care. The following recommendations to the GDP oral health educator are now being implemented: 1) actively involving the staff in the in-service education program; 2) delivering the education program on a regular basis to reinforce knowledge and develop positive attitudes; 3) emphasizing hands-on (bedside) training particularly with challenging residents; and 4) providing the staff an opportunity to share their experiences, successes, and challenges among themselves as well as with the GDP staff and collaboratively exploring ways to improve. Although previous studies<sup>29-32</sup> suggest that the use of social marketing strategies, success stories, case studies involving care-resistant residents, and other innovative strategies are generally unsuccessful in enhancing positive attitudes towards the provision

of daily mouth care, the GDP oral health educator and the administrative staff at various LTC sites feel that these strategies have good potential for raising awareness and bringing about behavior change provided there is strong institutional and staff support.

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## Conclusions

There is evidence that regular mouth care for institutionalized elders is effective for preventing oral diseases.<sup>33</sup> Our study indicates that the absence of an enabling environment (predisposing, reinforcing, and enabling factors), a well-developed professional education program, a strong sense of institutional responsibility, a well-defined reporting and accountability structure, and a genuine concern from RCAs, nurses, and administrative leaders to ensure the provision of daily mouth care for elderly residents all affect the efficacy of educational interventions.

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