

# New Advances in the Strategy of Cluster Nursing for Patients with Enterostomy

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**Abstract:** Colorectal cancer is a common malignant tumor of the digestive tract, and its treatment is a comprehensive treatment plan mainly based on surgical resection. Postoperative patients are prone to stoma and peripheral skin complications and serious negative emotions, so reasonable and effective nursing strategies are of great significance to reduce the incidence of complications and negative emotions in patients with enterostomy. Cluster nursing is a new nursing intervention model that introduces evidence-based medicine into the clinic, and for this reason, it improves patients' quality of life and quality of care. Through reviewing a large amount of literature, the status and progress of the application of bundled care in colorectal cancer enterostomy patients are reviewed, with the aim of providing empirical references for the wide application of bundled care strategies in colorectal cancer patients.

**Keywords:** Cluster nursing; Enterostomy; Colorectal cancer; Ostomy care; Review

## 1. Introduction

Colorectal cancer (colorectal cancer, CRC), also known as colorectal cancer, including rectal cancer and colon cancer, is one of the common malignant tumors in the digestive system. The Annual Cancer Statistics Report 2021 shows that the incidence of colorectal cancer is on the rise globally, with about 1.93 million new cases and as many as 920,000 deaths, and showing a trend of rejuvenation<sup>[1]</sup>. The current effective means of treating colorectal cancer is enterostomy<sup>[2]</sup>. Research shows that in 2019, China has nearly 100,000 new intestinal stoma patients every year<sup>[3]</sup>, and the total number of cases is close to 2 million cases, and 50% to 60% of colorectal cancer patients need to have an intestinal stoma. Postoperative patients are prone to increased incidence of stoma and surrounding skin complications and severe negative emotions. Therefore, reasonable and effective nursing strategies are of great significance in reducing the risk of complications and improving negative emotions in patients with colostomy.

Clustered care strategy is a new nursing intervention model, first proposed by IHI in 2001 and applied to clinical nursing practice, which aims to address the difficulties in clinical nursing practice and optimize nursing interventions to improve quality care for patients<sup>[4]</sup>. Its implementation is based on evidence-based medicine and a series of targeted measures based on clinical evidence of specific diseases<sup>[5]</sup>. With the continuous deepening of research and the expansion of application scope, in recent years, there have been reports on the application of Bundled Care in patients with intestinal stomas, and the application value of Bundled Care in enterostomy care has been initially verified. For this reason, on the basis of reviewing a large number of domestic and foreign related literature reports, a review is conducted from the aspects of introduction of colorectal cancer, current status of colorectal cancer nursing, current status of application of cluster nursing, and application of cluster nursing in intestinal stomas, with the aim of providing referential suggestions for the reasonable application and promotion of cluster nursing strategies in patients with intestinal stomas.

## 2. Introduction to Colorectal Cancer

### 2.1 Epidemiology of colorectal cancer

At present, colorectal cancer has received widespread attention. The 2018 report of the International Agency for Research on Cancer (IARC) shows<sup>[6]</sup> that globally, the number of new colorectal cancer cases is about 1.85 million, accounting for 10.2% of the global incidence of cancer, and the number of death cases is about 880,000, accounting for 9.2% of the global cancer deaths, with incidence rate located in the third place and disease and death rate located in the second place. The number of new colorectal cancer cases in China is about 520,000, accounting for 12.2% of the cancer incidence in China, and the number of death cases is about 250,000, accounting for 8.6% of the cancer deaths in China, with the incidence rate in the second place and the death rate in the fifth place<sup>[7]</sup>. Due to the high quality of living standard and bad living habits, the number of colorectal cancer patients is increasing year by year, which leads to the increase in the number of enterostomy patients in China.

### 2.2 Current status of treatment of colorectal cancer

At present, 50% to 60% of colorectal cancer cases will eventually develop into metastatic colorectal cancer (mCRC), and local treatment can only relieve the symptoms, and most of the treatment options are still based on comprehensive treatment<sup>[8]</sup>. In 10% of cases, a permanent stoma is performed, and in children, the stoma is mostly temporary. Intestinal stoma, also known as "artificial anus"<sup>[9]</sup>, is a surgical treatment that temporarily or permanently connects the small intestine or colon to the outside of the body due to therapeutic needs, and expels feces and other contents through an opening in the abdominal wall, thereby replacing the function of anus for excretion, which can be categorized into temporary and permanent intestinal stoma, and most of which are temporary in nature. Its essence is an anastomosis between the intestinal tube and the skin, therefore, without the implementation of standardized care and stoma management will increase the incidence of stoma-related complications and economic costs, and reduce the quality of life of the patient, for example, the lack of blood supply will cause stoma necrosis, improper suture will cause skin and mucous membrane separation and other undesirable complications. Post-operative intestinal stomas have an adverse effect on the psychological, physiological, lifestyle and social functioning of the patient, triggering negative psychological problems such as anxiety and depression, as well as a sense of shame and social alienation in patients with intestinal stomas. Because of the easy occurrence of stoma and peripheral skin complications and thus affect the patient's adherence to treatment and satisfaction with the quality of care.

## 3. Current Status of Colorectal Cancer Care

Nursing measures for colorectal cancer are usually adopted in China by conventional basic nursing, Chinese medicine nursing, nursing based on the theory of rapid rehabilitation, and comprehensive nursing. The way of combining TCM treatment or directly applying TCM conservative treatment is adopted, so as to reduce patients' adverse reactions and lack of self-confidence. With the continuous innovation and development of clinical nursing practice, the quality of patient survival and quality of care is improved while improving the physical condition of patients. Literature content shows that dietary care and TCM care are pivotal in the care of colorectal cancer patients. First of all, the etiology of colorectal cancer patients is related to dietary factors, and dietary factors have been the focus of foreign researchers, however, nursing care needs research results to guide<sup>[10]</sup>. Therefore, dietary factors should receive extensive attention from clinical practitioners. In addition, patients with intestinal stomas can apply nursing models such as case management model, clinical care pathway, multidisciplinary collaborative care, patient-family-centered care, and continuity of care, each of which adds innovative points on the basis of conventional care and significantly obtains differential effects. Each care model has its own characteristics, and clinical practitioners can apply the best and appropriate care service model according to the patient's own situation and needs to help reduce the burden of care and negative emotions, enhance the patient's sense of benefit, and improve the quality of care. In addition, clinical practitioners need to meet the physiological support needs, psychological needs and social support needs of patients with intestinal stomas. This is to facilitate recovery, reduce complications, and improve negative emotions such as anxiety and depression to enhance patient compliance and coping skills. Enhance the degree of adaptation of patients to intestinal stomas, so that patients accept and adapt to the stoma, thus helping patients to integrate into society, work and study as soon as possible, good social relations, social participation can effectively reduce the sense of social alienation of patients with

intestinal stomas.

#### **4. Current Status of Cluster Nursing Application**

##### **4.1 Conceptualization of cluster nursing**

In early 2001, in an effort to improve the quality of medical care in Bundled Care units in the United States, the Institute for Healthcare Improvement (IHI) and the Voluntary Hospital Association (VHA) launched the Ideal Design for Bundled Care Units (IDICU) program. In the context of the "Ideal Design for Bundled Care Units" project, IHI developed the concept of Bundled Care, which aims to bring an evidence-based culture to bedside management, focusing on solving common care problems for critically ill patients, improving the quality of care in the Bundled Care unit (ICU), and creating guidelines for best clinical care practices<sup>[11]</sup>. Cluster-based care, also known as cluster strategies, cluster interventions, and bundled care interventions, refers to a systematic approach to care interventions based on evidence-based medicine that integrates and combines several interrelated interventions to effectively address the key problems of care interventions. Clustered care programs usually contain three to five simple, clear and operational evidence-based nursing interventions, which can improve the quality of care and prognosis compared with the implementation of separate nursing interventions and joint interventions or joint implementation. When evaluating the effectiveness of cluster care, the "all or nothing" evaluation concept<sup>[12]</sup> should be followed, i.e., all interventions should be used in a complete and standardized manner. Cluster-based care not only improves the strategic and scientific nature of specialized care, but also promotes evidence-based nursing practice. In addition, the content of cluster care is not fixed, but is continuously optimized and improved as new evidence-based evidence emerges and patient care needs are adjusted, thus improving patient compliance and quality of care.

##### **4.2 Clinical Application of Cluster Nursing**

###### **4.2.1 Application of cluster nursing abroad**

There are more studies on perioperative Bundled Care by foreign scholars. Chuan et al.<sup>[13]</sup> in a study of postoperative hip fracture patients, through the use of fascial blocks, rational analgesia, avoidance of delirium-inducing medications, and continuous education programs for medical staff, and other Bundled Care interventions, the results of the study showed a significant reduction in the incidence of postoperative delirium in the patients. In addition, the bundled care strategy has also been applied to the management of medical teams. In a perioperative Bundled Care study on non-muscle invasive bladder cancer, Batura et al.<sup>[14]</sup> designed a bundled care nursing strategy to improve the compliance rate of mitomycin chemotherapy, and the results of the study showed that the Bundled Care strategy could effectively increase the proportion of mitomycin chemotherapy and prolong the recurrence-free interval and reduce the recurrence rate of bladder cancer. Overall, foreign researchers have developed a large number of perioperative care strategies based on the concept of Bundle detailed and feasible interventions, interdisciplinary cooperation between medical, nursing, and rehabilitation can be combined in the process of program implementation, and quality control and management at all stages are emphasized, which improves the quality of care in the perioperative period<sup>[15]</sup>.

###### **4.2.2 Domestic application of cluster nursing**

At present, ICU nursing is still the aspect that foreign nursing researchers focus on, with the care of ventilator-associated pneumonia<sup>[16]</sup>, central venous catheter-associated bloodstream infection prevention<sup>[17-18]</sup>, and stroke care<sup>[19]</sup> predominating, and the research on perioperative Bundled Care is relatively small. At present, the application value of cluster nursing intervention has been recognized in the clinic, and has good application effect in the care of craniocerebral injury, sepsis, ventilator-associated pneumonia, tracheal intubation severe asthma, perioperative surgical operation, and malignant tumors. Zeng Li et al. showed that<sup>[20]</sup>, cluster nursing intervention through the collection of sputum suction care, subglottic secretion attraction, oral hygiene, pulmonary function training and other interventions, to reduce the incidence of ventilator-associated pneumonia has an important role in reducing the incidence of ventilator-associated pneumonia, compared with conventional care patients, the incidence of ventilator-associated pneumonia is significantly reduced. In the study of perioperative nursing intervention for oral cancer, Xiong Ruiping et al.<sup>[21]</sup> gave cluster nursing intervention to 78 perioperative oral cancer patients, and through the collection of interventions such as health education, oral care, nutritional interventions, and postoperative early rehabilitation activities, the postoperative oral cleanliness and comfort of the patients could be significantly improved and the risk of postoperative oral

infections of the patients could be reduced. In addition, Bundle nursing interventions in intravenous cannula, infectious shock, nasal feeding, postoperative rehabilitation training, enterostomy and other inventions have also been reported, and all of them can obtain better intervention effects<sup>[22]</sup>. In addition, Bundle care can be combined with rapid rehabilitation surgery. Bundle nursing program also helps clinical nurses to carry out targeted evaluation and improvement of nursing care, which refines the interventions, can promote rapid rehabilitation and diagnosis and treatment effects, and improve patients' quality of life and nursing satisfaction. At the same time, Bundle nursing can also be applied to perioperative instrument cleaning, which can better improve the management effect. Helping staff to develop the workflow of reusable surgical instruments, staff management and implementation of standardized operating procedures has a positive significance in improving the quality of sterilization and reducing hospital infections.

## **5. Progress in the Application of Cluster Nursing in Intestinal Stomas**

### ***5.1 Prevention of complications associated with artificial mouths in intestinal stoma disease***

At present, the main problems faced in the care of intestinal stomas are postoperative related complications and negative emotions. In the study of perioperative Bundled Care intervention for patients with intestinal stomas, Liao Qian et al.<sup>[23]</sup> found that the establishment of a stoma Bundled Care management team and the implementation of stoma intensive management strategy intensive measures in the perioperative period of patients with intestinal stomas could significantly reduce the incidence of postoperative complications and shorten the postoperative recovery process of patients. Yang Qiaoliang et al.<sup>[24]</sup> found that standard stoma care combined with Bundled Care can improve patients' self-care ability, reduce complications and improve quality of life. Stoma and peripheral skin complications are common complications in patients with intestinal stomas, and it is important to actively prevent them. Although continuity of care can improve the quality of life of patients and reduce the incidence of related complications, the combination of Bundled Care and Bundled Care can improve the quality of life of patients and reduce the incidence of related complications. However, continuity of care in conjunction with Bundled Care models can improve the quality of care and quality of life. In a study of intensive continuity of care in the postoperative period after radical rectal cancer surgery, Cha Xiaoying et al.<sup>[25]</sup> found that the combination of Bundled Care and continuity of care could improve the quality of life and self-care ability of patients, improve the skin condition of the stoma, and to a certain extent reduce the incidence of stoma and peripheral skin complications as well as improve the clinical symptoms of the patients.

### ***5.2 Reducing negative emotions and improving quality of life of patients with Intestinal Stomas***

In an intervention study of perioperative application of combined Bundled Care model for patients with intestinal stomas, 68 cases of patients with intestinal stomas selected by Chia Minna<sup>[26]</sup> et al. were given Bundled Care interventions through the establishment of Bundled Care group, psychological guidance, health education, complication care, dietary and exercise guidance, and other interventions. The study showed that the standard stoma care process combined with the Bundled Care model can reduce the negative emotions of patients about colostomy, enhance their self-esteem, self-confidence and quality of life, and reduce the incidence of colostomy complications. Enterostomy patients have negative reactions such as impaired self-esteem, depression, and social difficulties due to changes in defecation patterns, odors from the ostomy bag, and body image disorders. Postoperative nurses should carry out health education and popularize the knowledge about stoma to enhance the knowledge of stoma, encourage them to keep a good mindset, improve self-esteem, and positively cope with the disease; targeted and systematic psychological care in Bundled Care can improve the negative emotions of patients, help them regain self-confidence, and positively face the life.

### ***5.3 Reduce the sense of shame of patients with intestinal stomas***

Wang Xiuling et al.<sup>[27]</sup> studied the intervention of intestinal stomas patients through the intensive nursing care by setting up an intensive intervention group, formulating an intensive intervention program and implementing it, and evaluating it using the Social Impact Scale (SIS). The results of the study showed that the SIS scores of the 2 groups of patients before the intervention were above 60, indicating that the sense of stigma was at a medium-high level, suggesting that the sense of stigma of intestinal stomas patients is in urgent need of attention and Exploration. Through the implementation of evidence-

based nursing measures clustered to provide comprehensive and high-quality nursing services for patients with intestinal stomas, it can effectively reduce the total SIS scores of patients with intestinal stomas as well as intrinsic shame and social rejection, which has a positive impact on the reduction of the sense of shame, can effectively alleviate the psychological burden of patients with intestinal stomas, help patients face up to the existence of intestinal stomas, and improve the level of their psychological adaptability to cope with their families and society, which has a good clinical Application value. Clustering strategy applied in clinical pathway through psychological care, health education, behavioral intervention and other measures to intervene in patients with intestinal stoma can not only effectively understand the psychological state of the patient, meet the patient's need for psychological support, but also shorten the time of exhaustion, reduce the amount of bleeding, reduce the patient's sense of shame, sense of social alienation<sup>[28]</sup> and improve the degree of satisfaction with the nursing care.

## 6. Summary and Outlook

Cluster nursing strategy is an "upgraded version" of the traditional nursing model by closely integrating the results of evidence-based research with clinical practice<sup>[29]</sup>. At present, in the care of patients with colorectal stoma, the implementation of intensive nursing intervention can solve many problems of patients with colorectal stoma, including the prevention of stoma-related complications, the reduction of negative emotions of patients with colorectal stoma, the improvement of the quality of life of patients, and the reduction of the sense of shame and social alienation of patients with colorectal stoma, and so on. Research on the application of Bundled Care strategy in the care of colorectal cancer patients with colostomy is still in a rapid progress stage, and there are deficiencies in the process of practice, such as the implementation details of the Bundled Care program are not perfect, there is no scientific evaluation means to measure the effect of nursing care, and there is insufficient evidence-based basis. In the nursing intervention for patients with intestinal stomas, the Bundle nursing strategy can be combined with clinical guidelines, expert consensus and individualized differences of patients to develop a better program and a method to measure the nursing effect and improve the quality of nursing care. Cluster-based strategies can be applied in clinically relevant areas by combining multidisciplinary dynamic development. It is believed that in the future research, with the acquisition of more clinical evidence-based basis, the continuous improvement of theoretical guidance, and the continuous improvement of the detailed work of nursing practice, the Bundle nursing intervention method will be more widely developed and more deeply studied in the care of patients with intestinal stomas.

## References

- [1] SUNG H, FERLAY J, SIEGEL R L, et al. *Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries [J]. CA: a Cancer Journal for Clinicians*, 2021, 71(3):209-249.
- [2] Wu Yiling. *Construction and application of sensitive indicators of quality of specialized enterostomy care based on the Adult Enterostomy Nursing Standards[D]. Hohhot: Inner Mongolia Medical University*, 2020.
- [3] Yao Hongwei, Li Xinxiang, Cui Long, et al. *Chinese colorectal cancer surgical case registry database 2019 annual report: a nationwide registry study[J]. Chinese Journal of Practical Surgery*, 2020, 40(1): 106-110; 116.
- [4] Zhang Y, Zhang J, Wang M, Zhao T. *Repairing Effect of New Dexamethasone Nanoparticles in the Treatment of Acute Lung Injury and Cluster Nursing. Cell Mol Biol (Noisy-le-grand)*. 2022;68(3):140-148. Published 2022 Mar 31.
- [5] An Wei, An Peng. *Research progress on prevention of ventilator-associated pneumonia by intensive care [J]. Hospital and Medicine*, 2021, 9(1): 6.
- [6] Sung H, Ferlay J, Siegel RL, et al. *Global Cancer Statistics 2020: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries [J].CA Cancer J Clin*, 2021, 71(3):209-249.
- [7] Zheng Rongshou, Zhang Siwei, Zeng Hongmei, et al. *Cancer incidence and mortality in China, 2016[J]. Journal of the National Cancer Center*, 2022, 2(1).
- [8] Gastrointestinal Surgery Group, Chinese Medical Association, Chinese Society of Surgery, Colorectal Surgery Group, Chinese Society of Surgery, Chinese Medical Association. *Guidelines for the diagnosis and comprehensive treatment of colorectal cancer liver metastases in China (2020 edition) [J]. Chinese Journal of Practical Surgery*, 2020, 41(1): 11.
- [9] Xiang Fusen, Yang Lin, Liu Liying et al. *Application of clinical nursing pathway combined with*

- intensive nursing program in perioperative period of enterostomy patients[J]. Hainan Medical Science, 2022, 33(24):3243-3246.*
- [10] LI Xiaodong; HOU Fenggang; ZHANG Jie. *Bibliometric analysis of the current status of domestic nursing care for colorectal cancer patients[J]. General Practice Nursing, 2020, 18(09):1028-1032.*
- [11] Rehmani AI, Au A, Montgomery C, Papathanassoglou E. *Use of nursing care bundles for the prevention of ventilator-associated pneumonia in low-middle income countries: A scoping review. Nurs Crit Care. 2024; 29(6):1511-1534.*
- [12] Marra A, Ely EW, Pandharipande PP, Patel MB. *The ABCDEF Bundle in Critical Care. Crit Care Clin. 2017;33(2):225-243.*
- [13] Chuan A, Zhao L, Tillekeratne N, et al. *The effect of a multidisciplinary care bundle on the incidence of delirium after hip fracture surgery: a quality improvement study. Anaesthesia. 2020;75(1):63-71.*
- [14] Batura D, Hashemzahi T, Colemeadow J. *A care bundle to improve perioperative mitomycin use in non-muscle-invasive bladder cancer. Int Urol Nephrol. 2018;50(6):1053-1059.*
- [15] ZHU Ting, GUO Shengli, CHEN Xiaorong, LIN Weina, GAO Nana, XU Cheng, YUAN Wei. *Progress in the application of intensive care in perioperative nursing[J]. Contemporary Nurses (Zhongdian), 2023, 30(03):12-15.*
- [16] Zeng Lei, Yang Ping, Wang Yan, et al. *Application and analysis of centralized nursing program in ICU ventilator-associated pneumonia[J]. Contemporary Nurses (Upper), 2020, 27(3):25-27.*
- [17] Hu Jing, Zou Haoran. *Observation on the effect of central venous catheter-associated bloodstream infection cluster intervention in ICU[J]. Contemporary Nurses (upper ten journal), 2018, 25(6): 23-25.*
- [18] Duan Tingting, Tian Ying. *Research progress on the application of intensive nursing care in the prevention of catheter-related infections[J]. Contemporary Nurses (Shanghai Lunar), 2021, 28(12):22-24.*
- [19] He Jing, Xu Dongmei, Zhu Juxun, etc *Bundle rehabilitation nursing for preventing aspiration in stroke patients with swallowing disorders [J] Chinese Nursing Management, 2020, 20 (S1): 25-26.*
- [20] Zeng Nengjuan, Wang Qiaoli, Huang Huijuan, Cao Jincheng. *Research on the application effect of intensive nursing intervention on ICU mechanically ventilated patients[J]. Modern Medicine and Health, 2020, 36(11): 1731 – 1733.*
- [21] XIONG Ruiping, XU Liang, WAN Li. *Effects of intensive nursing care on postoperative oral cleanliness, comfort and rehabilitation of oral cancer patients[J]. Nursing Practice and Research, 2022, 19(11): 1709 - 1712.*
- [22] ZHANG Juanfei, DANG Keneng, HUANG Xinrong, LI Jia, HUANG Lifang. *New development of intensive care strategy for oral cancer patients[J]. Journal of Aerospace Medicine, 2023, 34(03):336-339.*
- [23] Liao Qian; Liu Xueying; Luo Hongmei; Xie Wen; Zhou Hua. *Effect of standard stoma care process combined with intensive care strategy in the perioperative period of patients with intestinal stoma[J]. Nursing Research, 2021, 35(02):301-305.*
- [24] Yang Qiaoliang, Miao Rui. *Observation on the efficacy of standard stoma care combined with intensive nursing care for colorectal cancer patients with postoperative intestinal stoma [J]. China Cancer Clinics and Rehabilitation, 2021, 28(9):1149-1152.*
- [25] Cha Xiaoying; Huang Linfang; Ge Wei. *Effects of intensive continuity nursing on quality of life, self-care ability and stoma complications in patients undergoing radical rectal cancer surgery[J]. Hebei Medicine, 2018, 40(12):1905-1907+1911.*
- [26] QIU Minna; LIU Haihua; GUO Jing; XIAO Renshun. *Study on the effect of standard stoma care process combined with intensive care model in perioperative period of patients with intestinal stoma[J]. Heilongjiang Medical Science, 2023, 46(01):36-38.*
- [27] Wang Xuling; Yang Haiping; Chen Defeng. *Effect of intensive nursing care on the sense of shame in patients with enterostomies [J]. Modern Medicine and Health, 2023, 39(15):2659-2662.*
- [28] Wang Fen, Yu Haiyan, Zhang Shujuan, Yao Min, Dong Shuxian, Man Wenkun, Mao Xuehui. *Study on the current situation and influencing factors of social alienation in patients with intestinal stoma[J]. Journal of Nursing, 2022, 37(14):40-43.*
- [29] Zhou Hongyan. *Application of standard stoma care process combined with intensive care in perioperative period of patients with intestinal stoma[J]. Modern Medicine and Health, 2022, 38(17):3010-3012.*