The Nursing Practice of Conservative Sharp Wound Debridement:

Promotion, Education and Proficiency

BY Ruth J. Harris

Abstract

Wound debridement is essential for optimal wound care. Conservative sharp wound debridement (CSWD) of devitalized tissue is considered the quickest and most cost-effective method of wound debridement, but it carries a high level of clinical risk and may not be appropriate for all patients or in all health-care settings.[1] CSWD is a specialized level of wound care that requires practice-based, mentored educational preparation and a regulatory process for ongoing competency assessment. Based on therapeutic outcomes, not offering CSWD as a wound-care option may have legal, ethical and economic implications for health-care facilities. Both collectively and individually, nurses must be responsible for their practice standards, with the aim of promoting clinical competency beyond proficient and toward an expert level. CSWD is a valuable tool for wound care, but it is best practised within a supportive, multidisciplinary framework that promotes safe, ethical and competent care.

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Introduction

Worldwide demand for specialized nursing is increasing both in volume and in the complexity of wound-care treatments in acute care, community and residential health-care settings. Recognized wound-expert nurses are enterostomal therapy (ET) nurses in Canada, tissue viability nurses in the UK, and wound, ostomy and continence nurses in the U.S. While the need for in-depth wound-care nursing expertise is expanding, many experienced ET nurses in Canada are nearing retirement. At the same time, regulations are becoming more stringent for professional competencies in this field. Ethical, legal, accreditation and quality-of-care concerns drive the governing authorities (e.g., health-care employers, professional regulatory bodies, government agencies) to promote wound-care practice standards.

Worldwide diversity in wound care has resulted in the formation of international societies and associations with the unifying aim of defining common terms and establishing comprehensive guidelines that will build toward universal standards in this field.[2] Wounds such as pressure ulcers and lower leg venous, arterial, neuropathic, or diabetic ulcers are plaguing international health-care systems and exhausting staff and resources. In Canada, the Registered Nurses' Association of Ontario (RNAO) has published best practice guidelines on each of these wound-types.[3] As an ET and a hospital liaison/discharge planning nurse, I see the frontline impact of multiple hospital admissions and/or delayed discharges directly related to wound-care

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issues spanning acute, community and residential care.

While wound care varies around the world, there is universal consensus with historical and current literature documentation agreeing that the removal of exudates and devitalized tissue from wounds is essential for healing.[4,5,6,7,8,9] "Debridement" is the common term for the process of removing wound debris. There are several methods of debridement (Table 1), but it is generally agreed that the most economic and rapid way to clear out a wound is by sharp wound debridement.[10,11]

Definitions

Debridement comes from the French word *debrider*, meaning to unbridle, as it compares the constricting bands of tissue to bridles.[12] It was probably first used by surgeons working several hundred years ago in war zones who recognized that grossly contaminated soft-tissue wounds had a better chance of healing (and the soldier surviving) if the affected tissue was surgically removed to reveal a healthy, bleeding wound surface.[6] Early descriptions of debridement date back to Hippocrates, who described the deleterious effects of leaving necrotic tissue in wounds.[7] Debridement is medically defined as the removal of foreign material and devitalized or contaminated tissue from or adjacent to a traumatic or infected lesion until surrounding healthy tissue is exposed.[13]

CSWD is the removal of dead tissue, with a scalpel or scissors, above the level of viable tissue.[14] CSWD is probably the most aggressive type of debridement performed by non-physician health-care providers such as wound-care nurses, but if it is performed correctly and viable tissue is not exposed then there should be no danger.[7] While the CSWD technique is simple, it does require skill with sharp instruments to avoid aggravating the wound.[15] While wound debridement

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is defined within the domain of nursing, CSWD is a specialized level of wound care requiring practice-based mentored educational preparation and a regulatory process for ongoing competency assessment.[16,17,18,19]

Literature Review

Supportive data from classic and current literature explain the essential role of debridement in optimal wound management as it facilitates visualization of the wound wall and base for accurate, thorough assessment and treatment. It reduces the bioburden (i.e., volume of pathogenic microbes) of the wound by removing necrotic tissue and foreign matter (devitalized tissue supports bacterial growth with increased risk for wound infection), and it interrupts the cycle of the chronic wound at the molecular level so that protease and cytokine levels more closely approximate those of the acute healing wound.[10,20,21,22,23,24] The outcomes of not debriding wounds are increased risk of infection, ongoing inflammation, compromised restoration of skin function, abscess formation, malodour, inability to assess wound depth, nutritional loss through exudates, poor clinical and cosmetic outcome, delayed healing and psychological stress.[1,8]

Numerous studies have attested to the therapeutic and economic impact of CSWD in wound care. It can potentially prevent hospital admission or decrease length of stay, and decrease overall nursing care time, wound infection and wound-care costs while promoting wound healing and improving patient quality of life.[24,25,26,27]

Similar agreement exists on the need for specialized education and skill training for competency in this field for nursing.[1,18,19] CSWD requires a high level of skill and experience because practitioners must have the necessary knowledge and training to complete the task safely and effectively, and to be able to deal with complications as they arise.[6] Professional and educational qualifications required to perform CSWD have been proposed by numerous experts.[1,28,29,30,31,32]

The clinical governance framework has highlighted that health-care clinicians frequently perform debridement without having received formal education and training.[33,34] Knowing when not to debride (e.g., ischemic limbs, palliative, non-healable wounds, increased bleeding tendencies) and how to avoid preventable complications is also critical to wound care.[5] Clinical governance, which includes risk management, clinical audit and evidence-based practice, aims to help all clinicians to improve quality and safeguard standards of care, and seeks to ensure that health professionals have the right training, skills and competencies to deliver the care needed by patients.[30]

Education

In this era of clinical governance, self-education is not adequate training for wound-care practitioners to

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TABLE 1

Methods of debridement

Autolytic—Makes use of the body's own natural and highly selective ability to dissolve non-viable tissue. This technique requires keeping the wound moist with occlusive or semi-occlusive dressings (e.g., hydrocolloid, transparent film, hydrogel) that trap the endogenous proteolytic enzymes, immune cells, and growth factors. While generally low cost and painless, this method takes the longest to work and is inappropriate for infected wounds.

Biological—Maggots have been used since antiquity. The larvae of *Lucilia sericata* (greenbottle blowfly) are applied to the wound. These organisms can digest soft necrotic tissue, cellular debris, serous drainage, and pathogenic bacteria (e.g., MRSA) while releasing growth-promoting secretions. This method is rapid, selective, and generally painless, but patients and staff must be psychologically prepared for this therapy. Maggots are imported from the U.S. and require a moist confining dressing that needs to be changed every one to three days to reapply fresh larvae or discontinue if the wound bed is clean.

Enzymatic—Involves agents that break down necrotic debris and for use on eschar formation. This method is fast-acting and highly selective, but requires a prescription. These products are currently not available in Canada.

Mechanical—Physical removal of debris from a wound. The outdated method of wet-to-dry dressings is considered unacceptable because it is tissue non-selective, costly, time-intensive, and prone to causing pain, bleeding and wound trauma. Other mechanisms include irrigation, pulsative lavage and whirlpool therapy, but physical force may be damaging to granulation and epithelial tissue in the wound bed and margins.

Sharp or surgical—Uses a scalpel, scissors or other sharp instrument to cut non-viable tissue or remove debris from a wound. This is the quickest and most efficient method of debridement. If the target tissue is deep, close to another organ, or if the patient is experiencing extreme pain then the procedure may require an operating room, anaesthesia and a surgeon. This is the preferred method for rapidly developing inflammation or systemic infection, but is not recommended for malignant wounds. Sharp debridement by a trained clinician would be limited to the removal of non-viable tissue and not result in bleeding.

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TABLE 2

Conservative sharp wound debridement (CSWD): Current nursing policies across Canada

Alberta	▪ College and Association of Registered Nurses of Alberta (CARNA): www.nurses.ab.ca ▪ CARNA regulation 15(1)(a) authorizes regulated members to cut a body tissue or perform other invasive procedures on body tissue below the dermis or the mucous membrane. It is not intended to allow RNs to perform surgery, but to allow for deep wound debridement, provided the standards for the performance outlined are followed and applied appropriately: www.nurses.ab.ca/Carna-Admin/Uploads/HPA%20-%20Restricted%20Activities.pdf.
British Columbia	▪ College of Registered Nurses of British Columbia: www.crnbc.ca ▪ The BC government is currently developing a regulation that will set out the master list of reserved actions. A complete list of reserved actions recommended by the Health Professions Council is available at www.healthservices.gov.bc.ca/leg/hpc/review/reserved-list.html. ▪ The Nurses (Registered) and Nurse Practitioners Regulation sets out the reserved actions from this list that are within the scope of practice of RNs: www.crnbc.ca/downloads/433-scope.pdf.
Manitoba	▪ College of Registered Nurses of Manitoba: www.crnm.mb.ca ▪ Regulations are being developed to allow RNs who meet the regulations to perform minor surgical and invasive procedures designated in the regulations: http://cms.tng-secure.com/file_download.php?fFile_id=176.
New Brunswick	▪ Nurses Association of New Brunswick: www.nanb.nb.ca ▪ No policy or position statement on CSWD ▪ Nurses use a decision-making tool for nursing practice guidelines: www.nanb.nb.ca/pdf_e/Publications/General_Publications/Decision-making_in_clinical_nursing_practice_English2k8.pdf.
Newfoundland and Labrador	▪ Association of Registered Nurses of Newfoundland and Labrador: www.arnnl.nf.ca ▪ No policy or position statement on CSWD ▪ A provincial wound-care committee is addressing wound-care policies, including CSWD.
Northwest Territories and Nunavut	▪ Registered Nurses Association of Northwest Territories and Nunavut: www.rnanntu.ca ▪ Nurses refer wounds for CSWD procedures to a physician/surgeon.

carry out CSWD. Specialist nurses in the UK have drawn up a workable procedure for training and practice for wound debridement (see Web Connect).[33] Their innovative CSWD nursing school in London crossed traditional boundaries and required multidisciplinary collaboration between education and practice.[1] There is a need for Canadian CSWD competency assessments and a comprehensive multidisciplinary education framework that encompasses wound-care best practices, legal and ethical issues, research and technological developments, health and safety concerns, advocacy, and in-depth psychosocial patient care.

Competency is not isolated skill demonstration, but rather skill application in a contextual patient situation involving assessment and differential diagnosis for the development and application of a plan of care, evaluation and reassessment.[35] Competency assessment has been a concern in all health-care areas since 1997, when the Joint Commission on Accreditation of Healthcare Organizations incorporated competency language into its indicators.[36]

For CSWD, a suitably qualified mentor is mandatory for the achievement of competence in sharp debridement.[1] Presently, many Canadian ET and experienced wound-care nurses are nearing retirement. It would be timely to approach these expert wound-care profes-

Nova Scotia	▪ College of Registered Nurses of Nova Scotia: www.crnns.ca ▪ No policy or position statement on CSWD ▪ CSWD directives come from the organization by which the nurse is employed—for example, burn and vascular nursing policies where nurses can surgically debride with a physician's order at Capital Health in Halifax: http://access.med6worxx.com/CMS/cdha/Production/default.aspx?page=DocumentRender&class17.Id=30
Ontario	▪ College of Nurses of Ontario (CNO): www.cno.org ▪ Registered Nurses' Association of Ontario (RNAO): www.rnao.org ▪ No legislation specific to CSWD procedure ▪ A CNO practice standard addresses decisions about procedures and authority for practice settings and individual nurse considerations: www.cno.org/docs/prac/41071_Decisions.pdf ▪ RNAO recommendation 3.2e: "Sharp debridement must be conducted by a qualified person": www.rnao.org/Storage/29/2371_BPG_Pressure_Ulcers_I_to_IV.pdf
Prince Edward Island	▪ Association of Registered Nurses of Prince Edward Island (ARNPEI): www.arnpei.ca ▪ As a regulatory body, ARNPEI does not have specific scopes of practice for the wound-care/enterostomal nurse; rather, role specifications are employer- and organization-driven.
Quebec	▪ Ordre des infirmières et infirmiers du Québec: www.oiiq.org ▪ Association des infirmières et infirmiers d'urgence du Québec: www.aiiuq.qc.ca ▪ Legislation allows for nurses to perform CSWD if they have the theoretical knowledge, technical skills, and authorization from their employer to do so.
Saskatchewan	▪ Saskatchewan Registered Nurses Association: www.srna.org ▪ No policy or position statement on CSWD ▪ Nurses operate by transfer of function from physicians
Yukon	▪ Yukon Registered Nurses Association: www.yrna.ca ▪ Scope of practice: the activities nurses are educated and authorized to perform, as established through legislated definitions of nursing practice complemented by standards, guidelines, and policy positions issued by nursing regulatory bodies: www.yrna.ca/pdf/Standards2005.pdf
First Nations and Inuit	▪ Health Canada: www.hc-sc.gc.ca ▪ No statement on CSWD ▪ Guidelines include only mechanical debridement: "using aseptic technique, remove devitalized tissue; avoid taking healthy tissue": www.hc-sc.gc.ca/fniah-spnia/pubs/services/_nursing-infirm/2000_clin-guide/chap_09c-eng.php#9-16

sionals to promote their role as mentors to emerging wound-care clinicians. It would be a loss to Canadian health care nationally and wound care locally if these skilled experts were not used in expanding this CSWD experiential learning process. More funding, clinical time and resources need to be allocated to facilitate this opportunity.

Policies and Regulations

Governmental agencies and professional regulatory bodies are establishing limits and conditions on nurses' scope of practice and developing directives, including CSWD. In the U.S., RNs can perform sharp debridement as long as they have taken a recognized wound course, had supervised clinical practice, and their employer facility policies and procedures reflect the RN's capacity to perform these skills.[19,28]

In Western Canada, because RNs are now covered by the Heath Professions Act, CSWD has been declared a "restricted activity" in Alberta and a "reserved action" in BC.[16,17] Only those acts determined to pose significant risk to the public and legislated as "restricted" (or "reserved") are "exclusive" in that only those professions who are authorized to perform each restricted activity may legally do so, based on individual practitioner competence.[16] Ontario has similar legislation,

with regulations under the Nursing Act and "controlled acts" authorized by the Regulated Health Professions Act, 1991 (Table 2).

The Health Professions Act would replace existing exclusive scopes of practice with practice statements that allow for overlapping scopes of practice between professions.[16] Several professional groups (e.g., nurses, physicians, physiotherapists, podiatrists) will have the authority to perform CSWD. Interdisciplinary co-ordination and collaboration will be critical elements in organizing the delivery of care. The context of the practice situation will determine the extent to which a health professional will practise within the full scope of a restricted activity or reserved or controlled act. The introduction of a regulatory framework for CSWD will have many implications for health-care staff, managers, educators, researchers and patients.

Implementing Strategies

The Capital Region in Edmonton, Alberta, has successfully used surveys, literature review and a peer-review process to create a departmental culture that is open to practice-based learning.[34] In their three-tier model, the third and most invasive level of debridement is only done in conjunction with a physician and in a tertiary care facility. Second-level debridement is done after return demonstration and delegation by an ET nurse. First-level debridement can be done in a home setting. These first and second levels of sharp debridement only use scissors and forceps to excise vertical, loosely adhering devitalized tissue and are performed by home-care nurses in the community, not in acute or residential settings. Directives in Alberta also limit this debridement to certain body areas (exclusive of the head or neck) and do not allow portability of CSWD from one context to another facility.[16]

Health Canada is working to facilitate and support the implementation of a strategy on Interprofessional Education for Collaborative Patient-Centred Practice across all health-care sectors.[37] Many ET nurses were pioneers in the field of interdisciplinary team-building in wound, ostomy and continence care. By practising as a team, health-care professionals are able to balance the amount of responsibility and the workload, particularly in challenging wound-care cases.[38] The goal for interdisciplinary professionals will be to steer around turf wars for their mutual benefit to arrive at successful patient-care outcomes.[39,40]

Available and future technology (e.g., digital cameras, portable computers, video-conferencing) can enhance ongoing communication and feedback with mentors and referral clinicians. However, this cannot be substituted for initial and on-site mentoring for direct skill observation and clinical judgment practised in CSWD. According to Benner's five clinical levels of nursing (See Web Connect), "competency" is only the midpoint from novice to expert.[41] The aim is to move toward mastering CSWD—particularly as wound care needs more expert practitioners.

Wound-care practitioners should anticipate future debridement techniques and precision tools that will allow for more selective, discerning debridement options. One example is the increasing use of lasers, which both cut and cauterize, as a high-tech alternative that may provide more accuracy and safety for clinicians and patients.[42]

Conclusion

CSWD of devitalized tissue is considered the quickest and most cost-effective method of wound debridement, but it carries a high level of clinical risk and may not be appropriate for all patients or in all health-care settings.[1,24,43] However, not providing this essential service may become an ethical, economical, accreditation and legal issue for health-care providers. Promoting wound-care specialists (e.g., nurses, physiotherapists, physicians) to be available, accredited and accountable to provide CSWD will facilitate cost-effective patient outcomes in wound care.

Both collectively and individually, health-care professionals must be responsible for their practice standards. Before clinicians embark on debridement of chronic wounds they must ensure that they have the necessary skills to perform the task, the skill is within their scope of practice, and there is an agency or institutional policy in place to support them.[8] CSWD is a valuable tool for wound care, but is best practised within a supportive, multidisciplinary framework that promotes safe, ethical and competent care.

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References

1. Bentley J, Bishai P, Foster A, Preece J. Clinical competence in sharp debridement: An innovative course. *The British Journal of Community Nursing*. Supplement 2005;10(3):6-13.
2. Granick M, Boykin J, Gamelli R, Schultz G, Tenenhaus M. Toward a common language: Surgical wound bed preparation and debridement. *Wound Repair and Regeneration*. Supplement 2006; 14(1):1-10.
3. Registered Nurses' Association of Ontario. Nursing best practice guidelines. Available online at www.rnao.org/bestpractices/. Accessed May 8, 2007.
4. Bowler PG. Wound pathophysiology, infection and therapeutic options. *Annals of Medicine*. 2002;34(6):419-427.
5. Edwards J. Sharp debridement of wounds. *The Journal of Community Nursing*. 2000;14(1):23-26.
6. Leaper D. Sharp technique for wound debridement. Available online at www.worldwidewounds.com/2002/december/Leaper/Sharp-Debridement.html. Accessed June 8, 2007.
7. O'Brien M. Debridement: Ethical, legal and practical considerations. *The British Journal of Community Nursing*. 2003;8(3):23-25.
8. Sibbald RG, Orsted HL, Coutts PM, Keast DH. Best practice recommendations for preparing the wound bed: Update 2006. *Wound Care Canada*. 2006;4(1):15-29.
9. Thomas S, Jones M. Wound debridement: Evaluating the costs. *Nursing Standard*. 2001;15(22):59-61.
10. Anderson I. Debridement methods in wound care. *Nursing Standard*. 2006;20(24):65-72.
11. Hampton S. Caring for sloughy wounds. *The Journal of Community Nursing*. 2005;19(4):30-34.
12. Random House. *Random House Webster's Unabridged Dictionary*. New York: Random House. 2005.
13. Dorland WAN. *Dorland's Illustrated Medical Dictionary*, Thirty-first Edition. Philadelphia: Saunders. 2007.
14. National Institute of Clinical Excellence. The management of pressure ulcers in primary and secondary care. Available online at www.org.uk. Accessed June 8, 2007.
15. Bale S. A guide to wound debridement. *The Journal of Wound Care*. 1997;6(4):179-182.
16. College and Association of Registered Nurses of Alberta. Health professions act: Standards for registered nurses in the performance of restricted activities. Available online at www.nurses.ab.ca/practice/. Accessed June 8, 2007.
17. College of Registered Nurses of British Columbia (CRNBC). *Scope of Practice for Registered Nurses: Standards, Limits, Conditions*. Vancouver: CRNBC. 2006.
18. Tissue Viability Nurses Association. Conservative sharp debridement: Procedure, competencies and training. Available online at www.tvna.org/generic_forms/sharp_debridement_revise.pdf. Accessed June 8, 2007.
19. Wound Ostomy Continence Nurses Society. Wound ostomy continence nurses society position: Conservative sharp wound debridement for registered nurses. Available online at www.wocn.org/publications/posstate/debride.html. Accessed June 8, 2007.
20. Agency for Health Care Policy and Research (AHCPR). *Clinical Practice Guideline: Treatment of Pressure Ulcers*. Rockwell, MD: AHCPR. 1994.
21. Hunt TK, Hopf H, Hussain Z. Physiology of wound healing. *Advances in Skin and Wound Care*. Supplement 2000;13(2):6-11.
22. Falanga V. The chronic wound: Impaired healing and solutions in the context of wound bed preparation. *Blood Cells, Molecules and Diseases*. 2004;32(1):88-94.
23. Kirshen C, Woo K, Ayello EA, Sibbald RG. Debridement: A vital component of wound bed preparation. *Advances in Skin and Wound Care*. 2006;19(9):506-517.
24. Edwards J. Debridement of diabetic foot ulcers (Review). *Cochrane Database of Systematic Reviews*. 2002;4. Art. no.: CD003556.
25. Arnold MC. Pressure ulcer prevention and management: The current evidence for care. *AACN Clinical Issues*. 2003;14(4):411-428.
26. Fowler E, van Rijswijk L. Using wound debridement to help achieve the goals of care. *Ostomy/Wound Management*. Supplement 1995;41(7A):23-35.
27. National Institute of Clinical Excellence. Guidance on the use of debriding agents and specialist wound care clinics for difficult to heal surgical wounds. Available online at www.org.uk. Accessed June 8, 2007.
28. Gordon B. Conservative sharp wound debridement: State boards of nursing positions. *The Journal of Wound, Ostomy, and Continence Nursing*. 1996;23(3):137-143.
29. Poston J. Sharp debridement of devitalized tissue: The nurse's role. *The British Journal of Nursing*. 1996;5(11):655-656,658-662.
30. Preece J. Sharp debridement: The need for training and education. *Nursing Times*. 2003;99(25):54-55.
31. Razor BR, Martin LK. Validating sharp wound debridement. *The Journal of Enterostomal Therapy Nursing*. 1991;18(3):105-110.
32. Vowden KR, Vowden P. Wound debridement, Part 2: Sharp techniques. *The Journal of Wound Care*. 1999;8(6):291-294.
33. Fairbairn K, Grier J, Hunter C, Preece J. A sharp debridement procedure devised by specialist nurses. *The Journal of Wound Care*. 2002;11(10):371-375.
34. Lasair B. Wound debridement training: Practice-based learning for a high-risk skill. Available online at www.rebootconference.com/practicemakesperfect2007/pdf/abstracts.pdf. Accessed June 18, 2007.
35. Wound Ostomy Continence Nurses Society (WOCN). WOCN Society Position Statement: Competency and WOC Nursing. Glenview, IL: WOCN. 2003.
36. Joint Commission Accreditation Hospital. *Comprehensive Accreditation Manual for Hospitals (CAMH): The Official Handbook*. Oakbrook, IL: Joint Commission Resources. 2007.
37. Canadian Interprofessional Health Collaborative. Interprofessional education for collaborative patient centred practice. Available online at www.cihc.ca/resources/links.php. Accessed June 8, 2007.
38. Krasner DL, Rodeheaver GT, Sibbald RG. Interprofessional wound care. In Krasner DL, Rodeheaver GT, Sibbald RG, (eds.). *Chronic Wound Care: A Clinical Source Book for Healthcare Professionals*, Fourth Edition. Wayne, Pennsylvania. HMP Communications. 2007.
39. Brunke L. Regulation and collaboration. *Nursing BC*. 2005; 37(4):38.
40. Coombs MA. *Power and Conflict Between Doctors and Nurses: Breaking Through the Inner Circle in Clinical Care*. New York: Routledge. 2004.
41. Benner P. Using the Dreyfus model of skill acquisition to describe and interpret skill acquisition and clinical judgment in nursing practice and education. *Bulletin of Science, Technology & Society*. 2004;24(3):188-199.
42. Zacur H, Kirsner RS. Debridement: Rationale and therapeutic options. *Wounds*. Supplement 2002;14(7):2-6.
43. Singhal A, Reis ED, Kerstein MD. Options for nonsurgical debridement of necrotic wounds. *Advances in Skin & Wound Care*. 2001;14(2):96-100,102-103.

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