

# Barriers and facilitators to the implementation of Ontario's emergency department clinical decision unit pilot program: a qualitative study

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## ABSTRACT

**Objective:** In Ontario, clinical decision units (CDUs) were implemented as a pilot project in 2008 by the Ministry of Health and Long-Term Care as part of its strategy to reduce emergency department (ED) waiting times. Our objective was to describe general characteristics of the program at each of the participating sites and to examine barriers and facilitators to integrating CDUs into practice.

**Methods:** On-site small-group interviews were conducted in two phases with ED and hospital staff at participating sites, first at 8 to 12 weeks and again at 12 months postimplementation. Interview data were analyzed using the framework approach. Unstructured field notes and CDU clinical care protocols and documentation were also reviewed.

**Results:** The qualitative analysis identified 10 key themes related to integrating CDUs into EDs: shift in clinical and operational practice; administrative aspects of implementation; team building and stakeholder involvement; use of clinical care protocols; physical or virtual model of care; responsive ancillary services; involvement of specialist services; coordination with hospital and community supports; appropriate use of the CDU; and ongoing evaluation and monitoring. Each theme represents an important insight from the perspective of clinical and administrative staff at participating sites.

**Conclusion:** The implementation of CDUs is a complex process, with no single preferred clinical care or operational model. This study identifies a number of key considerations relevant to the future implementation of CDUs.

## RÉSUMÉ

**Objectif :** Le ministère de la Santé et des Soins de longue durée de l'Ontario a instauré en 2008 des unités de décision clinique (UDC) à titre de projet pilote dans le cadre de sa stratégie visant à réduire les temps d'attente dans les services d'urgence (SU). Notre objectif consistait à décrire les caractéristiques générales du programme dans chacun des sites participants et à examiner les obstacles et facteurs favorables à l'intégration des UDC à la pratique.

**Méthodes :** Des entretiens sur place auprès de petits groupes ont été menés en deux étapes avec le personnel de l'hôpital et du SU des sites participants, d'abord après 8 à 12 semaines, puis 12 mois après la mise en oeuvre des UDC. Les données recueillies lors des entretiens ont été analysées suivant la démarche-cadre. Nous avons aussi examiné les notes d'inspection non structurées, ainsi que la documentation et les protocoles de soins cliniques des UDC.

**Résultats :** L'analyse qualitative a dégagé 10 thèmes clés liés à l'intégration des UDC aux SU : virage dans la pratique clinique et opérationnelle; aspects administratifs de l'instauration; création d'un esprit d'équipe et mise à contribution des parties intéressées; utilisation de protocoles de soins cliniques; modèle de soins physique ou virtuel; services auxiliaires réactifs; mise à contribution des services des spécialistes; coordination avec le soutien de l'hôpital et de la collectivité; utilisation appropriée des UDC, et évaluation et surveillance continues. Chaque thème fournit un aperçu important du point de vue du personnel clinique et administratif des sites participants.

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**Conclusion :** La mise en œuvre des UDC est un processus complexe, auquel ne s'applique pas un modèle clinique ou opérationnel préférentiel unique. Cette étude cerne bon nombre de facteurs clés pertinents pour la mise en œuvre d'UDC à l'avenir.

**Keywords:** clinical decision unit, emergency services, evaluation, qualitative research

Many emergency departments (EDs) struggle with overcrowding and long waiting times, resulting in delays in time-sensitive care, patient departures prior to the completion of care, and frustration for staff and patients. In Canada, several jurisdictions have launched major initiatives to reduce ED waiting times.<sup>1-3</sup> Evaluating these interventions will help determine their benefit and provide guidance on implementation.

In Ontario, clinical decision units (CDUs), also referred to in the medical literature as observation units, were implemented as a pilot project in 2008 by the Ministry of Health and Long-Term Care (MOHLTC) as part of its ED Wait Times Strategy. CDUs consist of identified beds and physician services for selected patients who require extended observation, investigation, and/or treatment. CDUs have been proposed as a potential means of improving efficiency and patient flow and, in some cases, avoiding hospital admission.<sup>4-6</sup>

We sought to evaluate the implementation of the pilot CDUs during their first year of operation. Our

objective was to inform future implementation by describing the general characteristics of the program at each site and examining barriers and facilitators to integrating CDUs into practice.

## **METHODS**

### ***Description of the pilot project***

Funding for the pilot project was included in the 2004 Physician Services Agreement between the MOHLTC and the Ontario Medical Association (OMA). The funds were earmarked to support physician services in CDUs; other staffing and operational costs, as well as any capital funds required, were the responsibility of participating hospitals. Ontario hospitals with an annual ED volume of at least 35,000 were invited to submit applications in response to an expression of interest, which listed general operational principles for pilot CDUs (Table 1). Hospitals were otherwise free to operate their CDU in a manner appropriate to their

**Table 1. Ontario Ministry of Health and Long-Term Care recommendations regarding the implementation of pilot clinical decision units**

Characteristic	Recommendation
Location	Designated physical space is most desirable; if not, the ability to cohort patients (cohort would be based on 10 to 15% of stretcher beds)
CDU staffing	Professional health care staff with appropriate skill sets to care for CDU-specific patients
Use of care maps	Adherence to predefined care maps that relate to the most common conditions for patients admitted to the CDU (see below)
CDU and ED length of stay	Total time from ED registration to discharge from the CDU (home, transfer, or admission as an inpatient) should not exceed 24 hours; CDU patients may not be reregistered as ED patients during the same episode of care
CDU admission rate	Admission rates of CDU patients to inpatient beds should not exceed 30%
Access to inpatient beds	Access to inpatient beds for patients admitted to hospital from the CDU or directly from the ED should be prioritized identically
Access to other services	Timely access to consultative and diagnostic services should be ensured
Utilization review	Hospitals must agree to share utilization data (i.e., number of patients/day, number of CDU beds, diagnosis, length of stay, percentage of patients from CDU admitted to inpatient bed)
ED information system	Hospitals must have access to ED-based information systems
Major clinical conditions to prioritize for CDU admissions	Cardiac: chest pain, congestive heart failure, syncope/presyncope; Respiratory: asthma, chronic obstructive pulmonary disease, pneumonia; Gastrointestinal: dehydration, abdominal pain; ingestions; Analgesic management: e.g., renal colic, sickle cell crisis; Related patient conditions unique to a community (infectious outbreaks)

CDU = clinical decision unit; ED = emergency department.

local context. Funding was available as of August 2008, and all seven pilot CDUs were operating by October 2008.

### **Evaluation**

Between November 2008 and October 2009, on-site small-group interviews were conducted with ED and hospital staff at participating sites by nonhospital, evaluation research staff. Interviews were conducted in two phases, first at 8 to 12 weeks and again at approximately 12 months postimplementation. Primary contacts at each site were asked to invite up to four interview participants from the CDU, the ED, and Internal Medicine, as appropriate for their local setting. The interviews were approximately 1 hour in length and followed a semistructured approach with predetermined questions addressing barriers and enabling factors to CDU implementation and sustainability, the impact of the program on other hospital departments and the community, and the program's effect on patient quality of care. Interview guides were developed by the research team in consultation with the MOHLTC, Physician Services Committee, and the OMA. Interviews were digitally recorded, transcribed, and validated against the original recordings to ensure accuracy.

Data were analyzed for predetermined and emergent themes using the framework approach, a qualitative method of analysis developed for policy-relevant research.<sup>7</sup> The method consists of five distinct analytical stages as follows:

1. Familiarization with the data
2. Identifying a thematic framework
3. Indexing, or applying the thematic framework to the data
4. Charting, or regrouping coded text
5. Mapping and interpretation of the full data set

Transcripts were reviewed by one author (E.S.) using manual coding techniques. Developing themes were discussed with the research team, and our final grouping of themes was agreed upon by the research team. The findings described below draw from both phases of qualitative interviews and from the transcripts of a stakeholder information session facilitated by the MOHLTC and the OMA. Unstructured field notes and CDU clinical care protocols and documentation were also reviewed and included as descriptive

information. Analysis of quantitative outcomes such as length of stay and admissions was not included as part of this evaluation.

This study was approved by the Research Ethics Board (REB) at Sunnybrook Health Sciences Centre and by the REBs at participating hospitals. Informed consent was obtained from all interview participants.

### **RESULTS**

The total sample consisted of 31 clinical and administrative staff from the seven participating sites; of these, 24 were interviewed in phase I, 26 in phase II, and 19 in both phases. Participants varied across sites but included physicians ( $n = 15$ ), clinical directors ( $n = 7$ ), nursing staff ( $n = 5$ ), information technology (IT)/decision support staff ( $n = 2$ ), and senior hospital administrators ( $n = 2$ ).

The CDU model of care was operationalized at each pilot hospital as either a physical unit with dedicated stretchers and/or physical space designated for CDU patients immediately within or in close proximity to the ED (in such cases, patients were physically transferred from their initial ED stretcher to the CDU when they became CDU patients) or as a virtual unit, in which stretchers were used interchangeably for regular ED and CDU patients (here patients would remain in the same stretcher and location in the ED after they were designated as CDU patients). In virtual units, a maximum of 10 to 15% of ED stretchers could hold CDU patients at any given time. One site implemented a hybrid model using physical beds for designated daytime hours of operation and virtual beds during off-hours. The number of designated beds initially ranged from three to five, although one site later increased its capacity to eight. Staffing models varied by site, with two sites using dedicated physician and nursing coverage and the remaining five using emergency physicians (EPs) and nurses on shift in the department (Table 2).

Our results are categorized into 10 key themes (Table 3) and, when appropriate, include illustrative quotations from participants.

#### ***Shift in clinical and operational practice***

With the extended care focus of the CDU, some participants reported a degree of tension between the traditional scope of emergency medicine and the CDU

**Table 2. Description of pilot clinical decision unit sites and models of care**

Hospital	Annual ED volume	High-acuity patients (%)*	Patients > 65 yr (%)	Admission rate (%)	CDU model	Number of beds	Physician staffing model
A	44,530	59.6	18.4	12.3	Virtual	3	Emergency physicians on shift
B	55,241	67.9	23.2	13.5	Virtual	5–8 <sup>†</sup>	Emergency physicians on shift
C	46,987	77.2	25.5	12.7	Physical	5	Dedicated physician coverage, 24 hr/d
D	42,992	63.6	23.1	14.1	Virtual	5	Emergency physicians on shift
E	44,383	73.8	24.8	19.5	Physical	4	Emergency physicians on shift
F	61,755	75.5	26.0	17.9	Hybrid	5	Dedicated physician coverage, 9 hr/d
G	36,209	64.0	21.5	13.3	Virtual	4	Emergency physicians on shift

CDU = clinical decision unit; ED = emergency department.  
 \*High-acuity patients defined as all patients with Canadian Triage and Acuity Scale scores of 1, 2, or 3.  
<sup>†</sup>Increased as of September 2009.

principles of practice. Implementing CDUs in the pilot hospitals required a considerable shift in clinical and operational practice within the respective EDs, for

example, adopting CDU clinical care pathways and increased documentation requirements. The ease with which this transition was made differed from site to

**Table 3. Key themes and findings from pilot clinical decision unit sites**

Key themes	Findings from sites
1. CDU results in shift in clinical and operational practice for ED staff	Convey clear messages about the CDU model and processes of care; allow sufficient time for opinions and practice patterns to adapt
2. Consider administrative aspects of CDU implementation	Consider the administrative aspects of integrating a CDU model of care into the ED, including time to coordinate the implementation and associated costs
3. Ensure team building and stakeholder involvement	Ensure early stakeholder involvement by establishing multidisciplinary working groups prior to program implementation (e.g., emergency, radiology, the laboratory, and various consulting services)
4. Implement clinical care protocols	Clinical protocols enable a more uniform standard of care for CDU patients, providing clear goals and expectations for patient care and improving patient safety
5. Consider physical layout and design or virtual model of care	Determining best model for your site is based on physical plant, available space, and staff
6. Ensure responsive ancillary services	Establish standards for reporting times in advance to facilitate timely access to diagnostic and laboratory reports
7. Involve specialist services early	Involve specialist services early and ensure common understandings of model of care (e.g., referrals v. consultations)
8. Establish coordination with community support services	Establish good coordination with community support services (e.g., Community Care Access Centre, social work, geriatric nursing) to facilitate the discharge process
9. Ensure appropriate use of the CDU	Maintain control of the unit by the emergency department and set clear expectations regarding timely patient care and decision making
10. Enable ongoing evaluation and monitoring	Establish clearly defined outcome measures and regularly monitor use to ensure CDU performance targets are being met

CDU = clinical decision unit; ED = emergency department.

site, with hospitals noting similar challenges to varying degrees:

...the anxieties around the care and the impact on their traditional culture of taking care of patients [have] made uptake somewhat slow...

Participants' comments suggest that the transition to this model of care was dependent on conveying a clear and consistent message about the CDU model and process of care and allowing sufficient time for opinions and practice patterns to change:

...clearly communicate what the goals of the program are, what type of patients you're targeting ... [I]f there's not consistent clarity...you're not going to get the kind of response...you're hoping for...

### **Administrative aspects of CDU implementation**

Comments from several sites suggest that there is a need to consider the administrative implications of introducing a CDU model of care. These include the time required to coordinate the implementation of a complex intervention and costs associated with project start-up and ongoing physician supervision:

...there needs to be an acknowledgement that there is an administrative piece, too...

One pilot site in particular emphasized the importance of assigning dedicated funds for administrative costs such as the development of CDU clinical protocols, staff education/communication strategies, and utilization review.

### **Team building and stakeholder involvement**

A number of hospitals cited the early involvement of project stakeholders as a key aspect of implementation. Specifically, sites noted the importance of establishing multidisciplinary working groups prior to program implementation and ensuring ownership of the project by key stakeholder groups, such as radiology, laboratories, and various consulting services:

...I would recommend...that you organize a team approach... [W]e had health records, IT... physicians, the nursing team, the unit clerk team, and we met all as a group to discuss the

implementation of the CDU... [T]hat was key to having a successful beginning...

...you need the whole hospital involved... [I]t's a system thing and people should never forget... that everyone is impacted...

### **Use of clinical care protocols**

Nearly all pilot sites implemented clinical protocols and/or order sets specific to the CDU to guide patient management for common indications such as chest pain, asthma, and syncope; however, there were variations across sites with respect to the number and comprehensiveness of these protocols.

Several sites emphasized the benefit of the clinical protocols in enabling a more uniform standard of care for CDU patients, providing clear goals and expectations for patient care and improving patient safety:

...the first group of improvements involves the standardization of care these patients are receiving... [P]reviously, it was very practitioner-dependent...

One site noted that the clinical protocols serve as a means of keeping patients informed about the plan of care. Participants' comments also suggest the importance of the protocols in optimizing use of designated beds by providing patient selection support.

### **Physical or virtual model of care**

Proponents of the virtual model reported benefits such as the ability to adjust staffing based on patient census, more appropriate matching of patients to resources (e.g., monitored beds), eliminating secondary transfers of care, and having no restriction on the number of CDU patients at any given time. Conversely, some participants reported difficulties in ensuring staff adherence to the principles of CDU care with no clear distinction between virtual CDU and regular ED patients and difficulties with use in virtual units where physicians lack visual cues (e.g., an empty bed) to admit patients to the CDU.

Those supporting the physical model noted operational efficiencies and enhanced quality of care from having dedicated staff and improved physical conditions for patients requiring a longer stay. Challenges noted for physical models included redundancy in staffing and the inability to place

certain types of patients in a static unit (e.g., contact isolation patients).

### ***Responsive ancillary services***

The importance of responsive ancillary services was noted by a number of sites, specifically with respect to the timely delivery of laboratory results and imaging services for CDU patients. Participants suggested that there may be a need to establish standards for reporting times upfront to facilitate timely access to diagnostic reports:

...if the expectation is that [there are] more rapid turns on laboratory and radiology, then that sort of needs to be built in the model. What are those expectations? What are those standards?

### ***Involvement of specialist services***

Some hospitals noted particular challenges concerning the involvement of specialist services, specifically with respect to the time to consult and the distinction between consultations and referrals:

...the whole issue of [consultation] versus referral hasn't been understood... [T]he specialists do not understand that it's a closed unit with specific inclusion and exclusion criteria for specific patients on specific care pathways.

One pilot site noted that with the implementation of the CDU, ED physicians were required to initiate specialty consultations without an automatic expectation to transfer care. Participants at this site expressed concern that this new CDU process might confuse referrals for non-CDU patients in the ED, where a transfer of care was still expected.

### ***Coordination with hospital and community supports***

The importance of improved use of and coordination with support services (e.g., Community Care Access Centre [CCAC], social work, geriatric nursing) in facilitating the discharge process was underscored by a number of sites:

...one of the key determinants of our success, I think, has been the ability to integrate with our [geriatric emergency management] nurse and our CCAC...

Participants indicated that they were in a better position to make use of these services because of the added time the CDU allows. The availability of these resources, and therefore the extent of coordination of discharge planning, varied between sites.

### ***Appropriate use of the CDU***

A majority of sites noted the importance of maintaining control of the unit by the ED and setting clear expectations regarding timely patient care. Some participants cited concerns about unintended consequences of the CDU either in terms of delaying EP decision making or prolonging care for patients awaiting input from specialists:

...we're working hard to develop a common understanding...[so] that it doesn't become the 'clinical indecision unit,' that you don't put patients in there who you can't figure out and...hope the next guy sorts it out...

### ***Ongoing evaluation and monitoring***

Several sites noted the importance of clearly defined outcome measures and regular monitoring of use to ensure that CDU performance targets were being met:

...you have to have a good monitoring mechanism in place...some type of tool to manage your data and...create benchmarks.

One site highlighted the importance of ongoing review of the appropriateness of the clinical protocols with respect to their particular patient presentations.

## **DISCUSSION**

We conducted a descriptive summary and qualitative evaluation of Ontario's CDU pilot program, which was implemented in seven EDs as part of a provincial strategy to reduce overcrowding and waiting times. Our findings identify 10 key themes, each of which represents an important lesson that can inform other institutions looking to design and implement similar units or improve current CDU services.

### ***Themes and implications***

The CDU model of care involves an expanded scope of practice for both physicians and nurses in that it

requires a shift toward ongoing acute care. As such, staff at participating sites had to reconcile previously held views regarding the traditional practice of emergency medicine with CDU principles of practice. A similar observation *vis-à-vis* this “paradigm shift” was reported by Hassan, who noted that the transition may be more challenging in some EDs than in others.<sup>8</sup> Our results indicate that the ease with which this change came about varied among sites; participants’ comments suggested that the age of the physician group and staff receptiveness to improvement initiatives in general may have been contributing factors.

Given that CDU services are an adjunct to basic ED services and require a considerable shift in clinical processes, the administrative aspects of implementation must not be overlooked. Our findings suggest that hospitals need to devote both time and financial resources to the development of basic CDU infrastructure, including clinical protocols and operational policies, provisions for the oversight of the unit, staff education, and identification of relevant stakeholder groups. Efficiencies were gained by sharing existing clinical care protocols among the pilot sites, a process facilitated by the MOHLTC and the OMA.

CDU care involves collaboration among a number of distinct groups within the hospital.<sup>9</sup> Our findings emphasize the importance of establishing working groups with diverse representation early in the design and implementation process; this may help foster the necessary institution-wide support, or so-called “horizontal integration,”<sup>10</sup> of the CDU within the organization. Both early investment in the project and multidisciplinary collaboration are critical to implementation; the time and effort that this relationship building requires must be considered when planning project timelines.

The need for collaboration extends to consulting services. The challenges cited with respect to the timeliness of specialty consultation and uncertainty regarding consultations versus referrals suggest that there is a need to clearly delineate roles and responsibilities when multiple services are involved, especially regarding most responsible physician status. The importance of “active support” from inpatient specialties has been emphasized elsewhere.<sup>10</sup>

Hospital departments such as diagnostic imaging and laboratory services also must be involved in developing standards with respect to reporting times

for CDU patients. This finding is consistent with practice guidelines recommending clearly defined responsibilities for timely service from departments external to the ED.<sup>11</sup> It also underscores the importance of involving these services early in the implementation process to ensure a clear understanding of needs and expectations for reporting to the CDU. The support and availability of diagnostic services have been identified as key factors in the functioning of CDUs and similar units.<sup>10,12</sup>

Coordination with hospital ancillary services (e.g., social work) and community-based services (e.g., home care services such as CCACs in Ontario) was also identified as an important aspect of implementation. In fact, the availability of community-based agencies for discharge planning has been cited as a key factor in observation ward effectiveness.<sup>12</sup> Participants emphasized the value in the added time that the CDU allows for coordinating outpatient services for complex patients. The availability of support services and the coverage they provide varied among pilot hospitals; given our findings, access to these services may be an important consideration for prospective sites.

Ontario MOHLTC guidelines stipulated that pilot sites were to implement preprinted care maps for the most common CDU clinical indications. This provision is consistent with published practice guidelines recommending the use of clinical protocols or order sets.<sup>13,14</sup> Aside from expected benefits such as standardization of care, our findings suggest that clinical protocols are important in maximizing use of CDU bed capacity; well-defined admission criteria were noted to be of particular importance in this respect. More research on the ideal criteria for CDU admission for many of the protocolized diagnoses is warranted. Our findings also suggest the value of the clinical protocols in keeping patients informed about the course of treatment; it has been suggested elsewhere that this practice may improve patient satisfaction.<sup>15</sup>

Although practice guidelines often recommend a sequestered space,<sup>13,14</sup> based on our data, there is no clear consensus on the most appropriate CDU model (i.e., physical or virtual unit). Given that the Ontario pilot project did not provide funding for capital costs, the choice of model was largely dependent on the availability of existing resources and physical space within each hospital. As noted by Graff, a hospital may implement a virtual unit when the resources to provide

a designated location are not available but other elements of this form of care (e.g., clinical protocols) are in place.<sup>16</sup>

Participants identified the potential for the CDU to lead to prolonged EP decision making, extended waiting for patients requiring specialist consultation, or delays in hospital admission, as noted elsewhere.<sup>11,17-19</sup> Clearly articulated policies for the unit and well-defined admission criteria were considered important in ensuring appropriate use of the CDU. The issue of clinical governance and the importance of ED ownership of the unit, first acknowledged by Krome,<sup>20</sup> remains an important caveat for prospective sites.

Pilot sites identified the importance of establishing mechanisms for ongoing evaluation and monitoring of the CDU. Performance reporting was a requirement of the Ontario pilot funding, and sites were asked to monitor various aspects of use. The importance of regular review and monitoring of potential performance indicators has been identified elsewhere.<sup>8,11,13</sup> Our findings also suggest that there is value in monitoring the appropriateness of the clinical protocols for indicated patient populations, which may facilitate use of designated bed capacity.

### Limitations

Our results must be interpreted with caution given the sample size. Furthermore, the findings are based on the perspectives of those participating in the interviews; some groups (e.g., physicians from admitting services) were underrepresented, and their opinions may not be fully reflected. Although our results are likely generalizable to many hospital systems as they represent general challenges to CDU implementation, nuances in the organization of hospital and community services in different settings may limit the relevance of some of our findings. We were unable to analyze physical and virtual CDUs separately given the small number of pilot sites in the study, but most of our results are likely applicable to both types. Our study is also limited in that resource constraints precluded independent review and coding of the transcripts by more than one reviewer; multiple coding is aimed at reducing the subjectivity that is inherent in qualitative data analysis. Finally, this study did not provide a quantitative evaluation of CDU performance and the effect on ED crowding and waiting times; such an evaluation is currently under way.

### CONCLUSION

The implementation of CDUs is a complex process, with no single preferred clinical care or operational model. Although implementation issues are not limited to the introduction of one specific program, we have attempted to highlight those considerations most relevant to the implementation and functioning of CDUs. This study identified 10 themes that are of particular relevance to EDs considering or in the process of implementing a CDU and demonstrates the importance of an in-depth evaluation of individual interventions and implementation approaches to ensure that lessons learned at pilot sites can inform future implementation.

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