

## ORIGINAL ARTICLE

# Integrated care pathways: eleven international trends

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## INTRODUCTION

Integrated care pathways (ICPs) in one form or another have truly swept the world, largely as a 'grass-roots movement' by clinical professionals. The primary forces that create interest in them are (in order of magnitude):

- (1) changes in national health care economics requiring more efficient use of the resources of time, manpower, and diagnostic and treatment methods
- (2) initiatives and regulations for quality improvement and best practice from the expanding body of evidence
- (3) the desire for automation of the health record
- (4) the search for better ways to involve patients and families as partners.

The reasons for which ICPs were developed as clinical paths and CareMap<sup>®</sup> tools in the United States in 1985 remain the reasons they have been adopted and adapted by many countries over the following 17 years<sup>1</sup> (see Figure 1). From hands-on experience in almost all of the countries listed, The Center for Case Management (CCM) has identified 11 major trends that, in one way or another, each country has or will experience in its application of the ICP methodology.

## THE UMBRELLA OF STRUCTURED CARE METHODOLOGIES

Technically, ICPs come under the umbrella of a larger set of tools known as structured care method-

ologies; tools that formalize known patterns of care processes, thus adding predictability and providing the transfer of knowledge.<sup>2</sup> Research protocols, guidelines, algorithms and the problem-oriented medical record are all examples of structured care methodologies. Clinical paths, CareMap<sup>®</sup> documents, and eventually ICPs in the UK, were the first clinical tools to suggest content based on patterns of care given to approximately 68% of discreet patient populations (referring to one standard deviation of the bell curve) by their direct care providers in relation to disease and its treatment across time. These tools combine the key activities of each professional discipline and department, with the major patient outcomes expected as a result of those activities along a timeline of hours, days or weeks. Paths, maps, and ICPs also include a method called 'variance' to individualize interventions to each patient based on their special needs. Variance based on other factors, such as those of the organization, could also be recorded, aggregated and used retrospectively for improvement purposes by collaborative teams.

Within the umbrella of structured care methodologies, there are two types of tools that augment the ICP. The first are 'content tools', which add precision and depth to the ICP. These include inclusion and exclusion criteria, clinical outcome progressions, critical indicators from evidence-based practice, guidelines, algorithms, protocols and practice support information. The second set of tools that augment the ICP are 'action tools' that dovetail with the content described on the ICP. Action tools include extensive assessments, medical order sets, progress notes about variance, patient and family educational materials, graphic record sheets for vital signs, pre-filled lab and X-ray requisitions and variance tracking/audit forms.

The trend seems to be that once a simple grid of activities and outcomes versus time is developed for a selected diagnostic group, the action and content

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1985–1986	Invented at New England Medical Center, Boston; begun as case management plans, then critical paths and evolved to CareMap® medical record <sup>13</sup>
First Wave: 1986–1988	US 'early adapters' were hospitals in states with high Medicare patient volume: Arizona, Florida, Rhode Island, Pennsylvania, etc. for high volume surgical populations: orthopaedic, coronary artery bypass grafts
1989–1990	CareMap® project at the Toronto Hospital with the Ulticare <sup>a</sup> software product
1990+	Applications in Australia and UK.
Second Wave: mid-1990's	Spain (Catalonia), New Zealand, South Africa, Saudi Arabia
Third Wave: late-1990's	Belgium, Japan, Singapore, Germany
Fourth Wave: 2000+	Korea, Equador

<sup>a</sup>Later know as HDS and currently as the PerSe Patient 1 product; Atlanta, Georgia

**Figure 1** The spread of ICPs / clinical paths

tools are gradually added to support the practice and its documentation. Over time, health care organizations discover that the most important work is clearly defining the population for whom the ICP is designed to fit, through the use of inclusion and exclusion criteria. Following the development of policies and procedures for the general use of ICPs, a population-specific 'starter set' would include the ICP itself, medical order sets that coincide with the ICP content and a patient/family version of the path. Eventually, graphic and other flow sheets could be added, along with collateral practice support information (such as medical algorithms for selection of antibiotics, nursing algorithms for wound care, physical therapy algorithms for selection of exercises, etc.)

The only negative aspect of this endeavor is that it occurs too slowly to maintain enthusiasm and commitment. The time problem begins when organizations try to produce a perfect ICP at the beginning, which takes an inordinate amount of time and inevitably will need revision, anyway.

ICPs have crossed over professional, geographic and cultural boundaries because they are deceptively simple tools that provide visual structure for complex activities; a vehicle for interdisciplinary dialogue; and mechanisms for planning, giving and

documenting care concurrently, while evaluating care retrospectively.

ICPs make visible the invisible nature of giving care and the outcome criteria that drives health care clinicians. Thus ICPs can be custom-developed to any care process that has a beginning and an end, even if that end is a comfortable and dignified death. They capture in words the contributions of all concerned, and can bridge the gap between patients and their caregivers. In addition, ICPs can be drafted relatively easily, usually without needing consultation monies and, as a final plus, they can produce rapid results. This reality plays a large part in their international appeal and implementation.

## ELEVEN INTERNATIONAL TRENDS

Here follows the 11 international trends in ICP application identified by the CCM.

### 1. Strategic use of the right tool for the job

The new century marks an exciting time in the development of the best tools to assist clinicians with some of their many responsibilities. Because of the high degree of experimentation with both content and action tools in addition to the ICP itself, the world is discovering which tools are best for which patient populations and their particular phases or situations. In other words, health care institutions are supporting and promoting innovation of methods that will help them achieve their larger missions (and margins), and the clinicians involved are well read and strategic in their applications of ICPs and complementary tools. This is an indication that clinicians are learning from patterns, from predictors and from each other.

For example, ICPs may be written and used in phases for chemotherapy or in minutes for the emergency ward. On the other hand, ICPs for the emergency ward, may be defined by symptom clusters (such as vaginal haemorrhage), while in the operating theatre, they may be defined by type of anaesthesia (such as general, subdural, etc.), regardless of operative site. In another organization, clinicians that do not want to have duplication of documentation may want an ICP that describes activities, but only requires recording of numeric results. ICP documentation of outpatient visits and diagnostic procedures requires a different kind of format than an inpatient acute care health record. Algorithms are being imbedded in the event of certain variances; checkboxes and signature pages are being used to comply with legal standards, while free form text is used in appropriate places. Some hospitals have incorporated risk management standards into their ICPs.

One of the most exciting innovations is a health record organized as a book to tell the acute care patient's story, day by day. In this model, the ICP is divided into days, with a page per day. One hundred percent of patients are cared for using ICPs as the core of the health record, with the ICP designed to replace multidisciplinary notes of expected progress, the nursing care plan and daily nursing assessments of body systems. For case-type specific ICPs, the outcomes per day are pre-printed. For the generic medical and surgical patients who are not appropriate for pre-printed ICPs with outcomes, the multidisciplinary staff must identify, write and evaluate outcomes per day. Although clinicians are always welcome to write progress notes, the only ones required in this system are those related to patient variance and its explanation (if known). All other documentation for the day is placed under the same tab in the health record.

## 2. Confusion with the mechanism of variance

Variance remains the most misunderstood mechanism of ICP development and use – in every country. Variance is the difference between the item stated within the time period stated and the actual event. Therefore, the terms on the ICP are very important and should lend themselves to validity and reliability when trialled or piloted as drafts. Because ICPs are written for approximately 68% of a population, it stands to reason that there will be 32% variance on any item at any point. However, a variance from outcome is important at any time, and should be addressed and then documented in progress notes even if it is not tabulated for retrospective quality purposes. Variance from outcome is much more important than variance from task (activity, intervention), because it shows that there is a need for individualization through different interventions.

In the CCM's experience, clinical staff members do not want to be data collectors for variance research. They also do not want to be involved if tabulating variance requires an extra piece of paper, an extra function or extra time. Best non-automated solutions are to have the medical records and personnel departments tabulate variance data post-discharge, and to do samplings rather than 100% review. However, if the organization does want to use other means to collect variance data, it is imperative that the results and recommendations for change are routinely discussed with clinical staff.

Finally, after 20 years of variance data collection worldwide, CCM suggests that the only data that should be collected for retrospective use is that from a

small number of critical indicators of process and outcome; this will limit the quantity and enhance the quality of variance data.

## 3. Critical indicators imbedded for evidence-based practice

Critical indicators are the outcomes or interventions that make the biggest difference in the quality, time or resources used to help a patient recover from an illness, condition or procedure. Examples of critical indicators that need to be evaluated are: swallowing ability of patients with stroke; cognition, skin, nutrition, hydration and mobility levels of the elderly; and deep vein thrombosis prophylaxis in total knee replacement surgery. Critical indicators are the 'building blocks' for ICPs, and the 'sources of evidence used in the content of the ICP should be identified'<sup>3</sup> with a footnote. They define data for retrospective variance and serve as the bridge to continuous quality improvement by collaborative practice groups.

CCM has researched the best practice literature to name critical indicators for 20 acute care case types, and has gone one step further by stating outcomes as well as best practice interventions.<sup>4</sup> More than ever, the integration of critical indicators into ICPs has the potential to engage medical groups and facilitates an outcome orientation in the clinical environment to support active patient management.

Evidence-based practice is largely attributed to the UK in origin and has spread throughout the world as an ideal, if not yet a reality. In fact, a multiprofessional conference was held in Equador on the subject in 2001. One day was spent understanding how to imbed critical indicators into clinical paths to promote standardization and quality of care. The only difference in the discussion from other countries was the application of the ICP method to Equador's three largest patient populations: tropical diseases, malnutrition and alcoholism.

Ultimately, critical indicators can be used to compare quality data across the world, regardless of each country's public and private reimbursement policies, length of stay or other variables. For example, if research and experience points to lighter anaesthesia, earlier extubation and ambulation in patients undergoing open heart surgery, then those indicators can be compared for compliance and results. Currently, quality projects are undertaken on a large basis, such as the establishment of pain control for the dying patient. Eventually, the organizations using ICPs should show better results because pain control has been woven into an entire practice and is revised on a regular basis.

#### 4. Value compass

A value compass, also referred to as a balanced scorecard, data dashboard, or DataMap<sup>®</sup>, is a way to display multivariate data for ready access.<sup>5</sup> Through this method, data showing clinical and financial satisfaction and other results can be reviewed simultaneously by the decision-making group.

The value compass can be organized to show data at either the individual patient level (Mr Jones in the back pain clinic),<sup>6</sup> the casetype level (all patients with back pain), the programme level (neurology) and the organization level (for example, the NHS Trust).

Actual indicator scores appear under the 'clinical' quadrant of the compass. Collaborative practice clinical groups and health care administrators are using the value compass in the US to establish a more accurate picture than was previously available through stand-alone data. (see Figure 2)

#### 5. Formal programmes of care and disease management

As organizations have success with linking together the ICPs for diagnostic, therapeutic, rehabilitation and recovery phases of a disease or distinct condition, they are gaining the perspective of the patient's journey throughout formerly disconnected care processes. They also gain a realization about the disconnected care professionals that are organized around their place of work rather than the patient's pathway. As a result, organizations are beginning to define programmes of care from the beginning to the end of patient contact for an illness or condition (see Figure 3).

They are also developing disease management programmes to help maintain patients in as healthy a state as possible outside of acute care. The Programme of Care for Stroke Patients developed by the South Manchester NHS Trust<sup>7</sup> is an excellent example of how a group of clinicians can overcome barriers to care. ICPs for patients and families across time create realistic expectations regarding patient care processes and anticipated outcomes thereby empowering patients and clinicians. It is through programmes of care and disease management that the term pathway really counts!

#### 6. Need for case managers

There are goals and situations in which the ICP alone is not adequate for individualizing care or providing continuity for patients. In these situations and especially in programmes of care and disease management, health care is turning to experienced nurses to provide case management. Case managers 'create a closed loop of services'<sup>8</sup> at or near the client level through assessment, planning, intervening and evalu-

ating care. They also provide problem-solving and decision support to their professional colleagues. Formal case management as a method for helping patients 'navigate' health care is most common in the US, Canada and Australia. In South Africa, nurse case managers were used to support and educate asthma patients using peak flow meters and computer access to their medical consultants. The goal of reducing or avoiding emergency visits was met through case management. Another example is the use of a nurse case manager, at a medical center in the US, for coordinating all phases of care for newly diagnosed breast cancer patients. Lately, case management is under consideration in the UK to help ease flow and capacity for acute care, and also pull together treatment teams in rehabilitation and other services.

#### 7. Technology and pharmaceuticals

New technologies and pharmaceuticals will necessitate the constant revision of ICPs, both in terms of content and timing. As patients have increased access to insulin that can be inhaled, or total body scans that can be given as gifts, ICPs will have to be 'morphed' to fit new situations. There will be more personal ICPs available for patients to use as health diaries on the Internet.

#### 8. Redefining levels of care and prevention

Through the use of ICPs, levels of care can be defined, and then redefined as needed. For example, because of length of stay constraints in the US, the recovery phase of illness has been virtually cut off and relocated to alternative settings. There are at least 46 types of post-acute settings for care in the US.<sup>9</sup> This is a striking difference from Japan, where a full recovery of an average of 24 days for all conditions takes place in the hospital. This comparison, conceptualized for surgical patients in Figure 4, and other similar comparisons pose interesting questions within and between countries and cultures. ICPs should support new levels of care when they emerge within a country. They might also serve as a basis to compare the relative value of specific levels of care with the overall achievement of end outcomes for specific patient populations.

#### 9. Frustration with the promise versus reality of information technology capabilities

When ICPs and their predecessors first arrived on the health care scene, most information technology (IT) companies decided that they were a 'fad' and, as such, were not to be taken seriously. Also, around the time that clinical paths and CareMap<sup>®</sup> tools were introduced, most US health care organizations were purchasing accounting systems rather than clinical

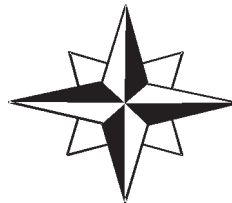
**Medical/Clinical Outcomes:**

See also drill-down reports by DRG/MDC

- Mortality during hospital stay, risk adjusted with APR-DRG
- Mortality at 3 and 6 months
- Infection rate in hospital
- Complication Rates
- Clinical Indicators per Diagnosis, MDC and MD
- MD order sets; variations by casetype
- Functional Status - SF-12
- UHC Benchmark Outcome Report

**Operations:**

- Patient satisfaction: overall = 85; Target = 91.8. ED = 84; Target =85.3
- Re-admissions with 30 days = 12.8%; Target = 6%
- Unplanned ED visit within 24 hours; no data available
- Decrease nursing (RN) vacancies from 10% to 3%
- Telemetry/Medical ICU LOS current 3.1 days, target 2 days
- Employee opinion survey: current 3.0; Target 3.27 on scale of 4
- Clinical integration survey: low score: 'information systems, high score: 'multidisciplinary cooperation'
- MD opinion survey: low score 'speed of admit from ER'



**Finance:**

- Average revenue per DRG target = 3%
- Median LOS target: 4.95; current 5.3
- Volume Targets:
  - Inpatient days 85,000; current 84,330
  - Outpatient days 3700; current 3650
- Patient days in AR 55; current 65
- Top ten DRGs = 52% volume
- 3 DRGs (14, 79, 89) = \$1,155,987 loss
- Med/Surg cc capture rate 85%, Target 95%
- Delay days for rehab = 179; target 0
- Cost per case target: decrease \$100 overall
- CABG target under \$10,000: current = \$15,000

**Planning and Marketing:**

- Gain approval for new cardiac cath lab
- Increase market share:
  - OB deliveries from 200/month to 225/month
  - Elective surgery – target not set for 2001
  - Outpatient visits – increase by 10% from 250,000
- Maintain Top 100 Hospital Status
- Renew grant for Complementary Therapy Programme: \$400,000
- Increase distribution of health risk appraisal by PHO from 75% to 80% new enrollees

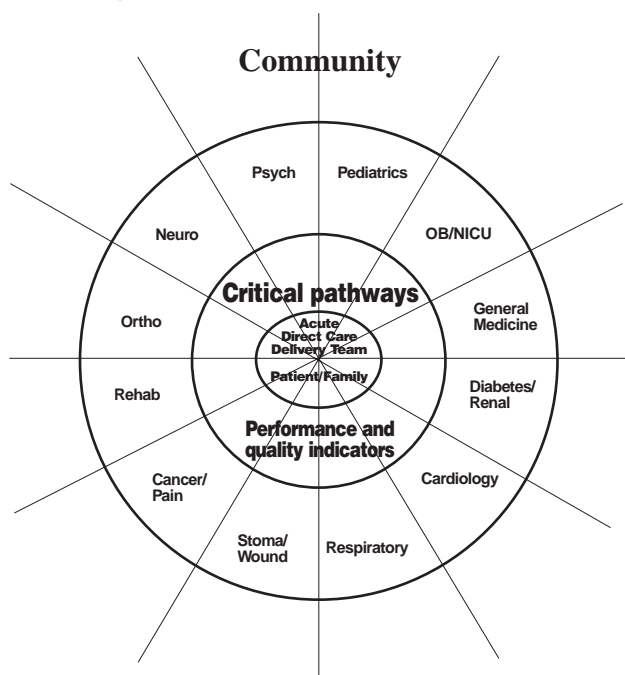
Demographic Information:	% Admits	LOS
Medicare	59.7	5.85
Medicaid	10.9	8.13
Managed Care	8.2	5.6
Commercial	17.0	4.8
Self	4.2	6.3

Volume and Referral:	%
Discharges to home care	%
Discharges to hospital subacute	%
Discharges to SNF	%
TOTAL	%

Adapted from value compass concept: Dartmouth-Hitchcock Medical Center © 2001: The Center for Case Management, Inc.

**Figure 2** Sample value compass. DRG, Diagnosis related group; MDC, major diagnostic categories; APR, ambulatory payment group; MD, medical doctor; UHC, University Hospital Consortium; ED, emergency department; ICU, Intensive Care Unit; LOS, length of stay; ER, emergency room; AR, accounts receivable; CABG, coronary artery bypass graft; OB, obstetrician; PHO, Physician Health Organization; SNF, Skilled Nursing Facility.

## Programmes of care by cluster



**Figure 3** Programmes of care by cluster. OB, obstetrician; NICU, Neonatal Intensive Care Unit.

documentation systems. After accounting systems that track cost per case and other important factors, IT companies put heavy emphasis on admission-discharge-transfer software, to speed test results reporting, and lately, physician order entry software.

Even after many applications in the US and elsewhere, most of the original IT companies were not prepared to rewrite their software to accommodate to ICP functions. Ironically, some attempts to automate ICPs have actually produced more work than the paper versions! Whereas health care providers accepted the lack of automation of ICPs for years when they, themselves, were not comfortable with technology, nowadays they become frustrated with the fact that their work cannot yet be automated similarly to their home computer and e-mail functions. Some smaller IT companies have been able to automate the basic use of ICPs including variance reporting, but only a handful of larger companies have made inroads not only in the use of ICPs, but also in connecting them to all necessary components of a health record. The Patient 1 software product from PerSe is an example of how software can not only accommodate ICPs, but can also be used to support patient care rounds and other clinical coordination efforts.<sup>10</sup>

## 10. Applications in social services and community programmes

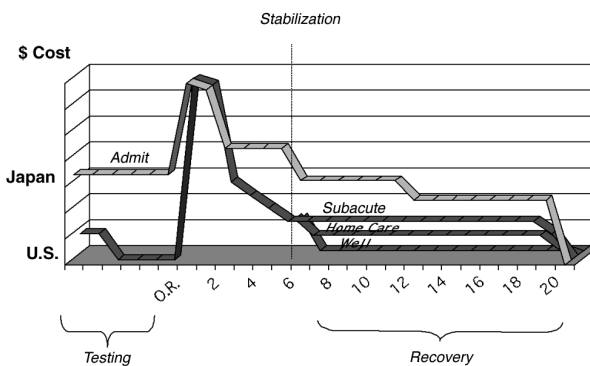
ICPs are actually project management documents applied to health care populations. It is interesting that these business turned health care tools are now being used for more traditional social services and community programmes; i.e. the non-sick. For example, they have been extended to assist with conditions such as learning disabilities,<sup>11</sup> homelessness in the elderly,<sup>12</sup> and others.

## 11. Demands high maintenance

A serious ICP programme in which ICPs are the written suggestions of standards of care and practice for selected patient populations, requires constant education, revision based on variance data and other feedback, updating to reflect new evidence and technology, and reworking of forms to meet changing regulations and internal needs. Although getting the first ICP up and running is more difficult than those that follow, every ICP takes thoughtfulness and strategy. Regardless of the country or the application to selected ICP patient populations, CCM estimates that an ICP enterprise requires 20% effort for content, 30% effort for format, and 50% effort for responsible use, including addressing concurrent variance and using focused retrospective variance data.

Truly, ICPs are more a political initiative than a clinical one, necessitating continuous discussion, negotiation and internal marketing. Most importantly, regardless of country, the long-term use of ICPs requires that the top administration AND the governing board of a health care trust, hospital, network, or agency, understand the rationale for their use and are

## Conceptual comparison: surgery in Japan & US



**Figure 4** Conceptual comparison: surgery cost and length of stay in Japan versus US. © 2001: The Center for Case Management, Inc.

kept abreast of positive results and opportunities for improvement. In every country, 'nothing succeeds like success'.

## SUMMARY AND CONCLUSION

ICPs connect the world of practice with the world of knowledge, as shown in Figure 5. Both worlds, as well as the ICPs, have become more sophisticated over the past 20 years. In some organizations, they have died under their own weight of paper, misunderstandings and maintenance. In the organizations where they thrive, there are nurses, medical consultants and others that have experienced and therefore believe the positive outcomes of their use.

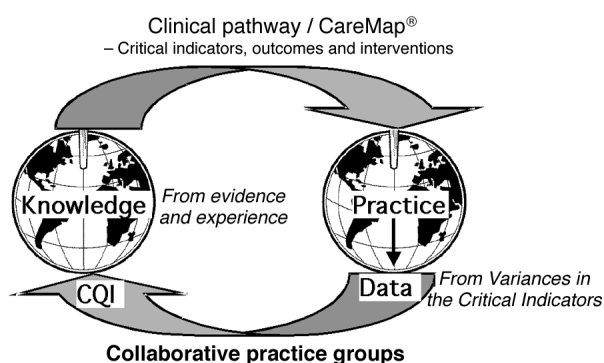
ICPs are living tools that must always be seen as a mirror of best practice; they have many functions, including meeting quality, risk and financial targets for their organizations. Once both staff and patients begin to see health care as a clinical trajectory that should be organized and sequenced to achieve specific clinical outcomes, it is impossible to accept less as a patient or a professional. ICPs will continue to evolve and hopefully be automated as the core of a medical record. True change has been made in the

way leaders in every country touched by ICPs orchestrate the delivery of health care; one patient at a time.

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## Connecting the world: how practice improves



**Figure 5** Connecting the world: how practice improves.  
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