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Care plans by code

Christopher White

Formal care plans extend the functions of traditional psychiatric case assessments by specifying more of the operational details of case management practice. They usually include descriptions of case management problems and objectives, the planned case management interventions, and who is involved in providing care.

Care plans may also include items such as therapeutic targets, outcome assessments, when interventions are to occur, procedures for co-ordinating components of care, management of anticipated risks, and specifications of resource needs and costing. Compared with case assessments which summarise the main features of the case, provide a brief diagnostic review, and discuss the elements of investigation and treatment, the focus on specified components of delivered care in care plans makes them suitable for recording itemised case management information.

The contents of care plan systems vary considerably with professional context or service needs. Care plans for single professional groups tend to focus on the care planning issues and on the procedures employed by that professional group (Aidroos, 1991; Bergen, 1992; Buchanan, 1993), whereas shared care plans for multidisciplinary teams require a more integrative approach to describing elements of case management.

Care plans prepared for patients, whether by a member of a health care profession or a generic care manager, should define components of care from the patients' perspective.

In some national settings, structured care plans are being employed to define care packages for costing and insurance purposes. The "managed care plan" has featured as a standard health care packaging system in proposals for health care reform (Kongstvedt, 1995).

Computerised care plans

Computerised care plan systems for multidisciplinary case practice in a mental health context have not been generally available (Lelliott *et al*, 1993; Weiss & Chapman, 1993). Development of a computerised care plan management system in the Dundee psychiatric service started in 1990, stimulated by the requirement of the Scottish Code of Practice (Scottish Home and Health Department, 1990) that a structured treatment plan be prepared for every in-patient case. The main incentive was the possibility of using a computer system to reduce the time required to produce a well structured, printed care plan while simultaneously storing comprehensive case management data for audit and resource management.

A key element in the project was the use of coding terms: re-usable sections of text managed by computer programmes with a unique code for each term. Since care plans (and case assessments) usually contain a high density of key concepts, they are suitable for creation from coding terms, even though the variation in terms in a mental health context is large and coding term repetition rate across care plans for many coding terms is low.

It was possible that with a sufficiently extensive and flexible coding term set, the text of care plans could be composed on screen solely by selecting coding terms. Care plans could then be created efficiently by staff with minimal keyboard skills since typing text would effectively be eliminated. Once the required terms were selected, the programme would store coding for all the text in the care plan in a form suitable for analysis, and translate the codes into coding term text during the production of printed care plans for the notes, or in other reports.

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Objectives and requirements in system design

In our original design for a multidisciplinary care plan layout, the main components of the treatment plan specification in the Scottish Code of Practice (Scottish Home and Health Department, 1990) were employed. They included:

(a) the salient features of the case
(b) the doctor's view of the diagnosis
(c) the general lines of treatment
(d) investigations and therapeutic interventions
(e) admission status and other legal issues
(f) staff responsibilities
(g) review date and review intervals.

Those components are in some respects more extensive than the care plan specification of the Royal College of Psychiatrists' report on computer systems (Lelliott *et al*, 1993), but appear to conform with good multidisciplinary practice.

To produce useful care plans for sharing between staff and possibly with patients, the system had to fulfil certain requirements.

The system had to cope with detailed and flexible tailoring of care plans to fit individual cases. Care plan structures had to be adaptable enough to suit a variety of service team needs in ward, out-patient or community settings throughout a care period. The language and conceptual structure of coding terms had in general to be accessible to staff and to patients, and care plan production had to be rapid and efficient but reasonably simple to use, with immediate on-screen help.

Achieving those objectives depended firstly on developing a suitable database and text management system, and secondly on developing the necessary coding terms.

Care plan structures

The structure of our current full assessment care plan is divided into sections for case description, problem definitions including diagnoses, case management interventions and staff responsibilities, and outcome evaluation.

Much of the detail of the 'salient features of the case' section of the care plan layout that we developed in 1990 was based on a standard, multiaxial, psychiatric case assessment. Coding areas were provided for presenting problems, history of the current episode, other psychiatric history, current and past physical disorder, diagnostic categorisation, current case management problems/issues, case management objectives, investigations, and case management interventions.

Box 1. Coding areas for full assessment care plans

Case description
- presenting problems
- history of the current episode
- other psychiatric history
- current and past physical disorder
- physical examination
- personal/domestic issues
- case related risks
- legal issues

Problem definitions
- diagnostic coding
- current case management problems/issues
- case management objectives
- outcome rating issues
- outcome issue severity

Case management /interventions
- investigations
- case management interventions
- staff and their responsibilities
- prescribed medications
- discharge or closure management

Other coding areas included at the start were personal/domestic issues including social function and sources of stress, case related risks, legal issues, discharge/closure management and staff responsibilities for the various interventions (Box 1).

For in-patient case management, follow-up care plans completed at intervals during an admission employed most elements of the full assessment care plan, excluding only the presenting problem and psychiatric history sections.

Discharge or closure care plans specified details of further case management including identified staff, appointments and reminders.

Collection of computerised care plans on an acute male ward in Dundee started in May 1991. Since then, admissions under two consultants on one ward have been assessed using coded care plans alongside standard clinical assessment procedures. The total number of initial assessment and follow-up care plans for admissions to the ward exceeded 1000 during 1994.

Staff of all disciplines have generally taken well to using the system as long as excessive demands are not placed on their time. Some people clearly have more anxiety about using computers than others and may require more initial support. When

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basic computer management skills are mastered in a clinical team, the practice of computer-based coding becomes routine and interest focuses on coding quality.

The organisation of the main coding areas has changed relatively little since routine coding of care plans started. The main changes have been the addition of outcome assessment; a physical examination section; and a section for unmet needs.

Extended text (or memo) fields within database records were implemented in 1994, providing word processing facilities for descriptive notes alongside database coding.

For service areas where comprehensive care plan coding was inappropriate or too time consuming, brief care plan layouts have been employed, omitting the case history, mental state and examination sections, but retaining the case management, problem definition, and intervention sections.

In day hospital and community resource centre settings, the care plan system has also been modified. Brief care plans have been used, alongside separate database records for details of contacts, individual problem management, and care package records itemising components of care.

Case tracking and case review management functions linked to care plans have been much more important in community service sites than for in-patients, since clinical teams deal with larger numbers of cases and more agencies, and patterns of care management are more complex.

Care plan functions in a team context

The main objective in developing the current care plan structure was to provide a summary of the key information in the assessment and management of each case by the multidisciplinary team, at suitable intervals during a care period.

The care plan provides a focus for team discussions, a means of defining and communicating the key components of each case, and a structured platform for teaching, audit or research.

The multidisciplinary overview yields sufficient information about the main components of care in each case for resource oriented analysis and itemised case costing.

The computer programme is also designed to produce detailed intervention protocols, to report the frequency of particular interventions, and to aid the assessment of intervention effectiveness. However, valid and reliable recording of such detailed information can place heavy demands on staff time and on training needs, and the values of those functions require assessment.

While the multidisciplinary care plans primarily record abnormalities, nursing assessment and personal profile records on the system contain a complementary set of coding terms describing other aspects of the patients: their circumstances and personal effects at registration, and various practical case management issues.

Practical procedures

Care plans can be completed by coding on paper using printed coding lists, but it is usually easier to select the coding terms using the computer's facilities. The completed care plan appears on screen as a series of selected codes organised under coding field titles. The codes are decoded to their text values either on screen or during care plan production and analytic reports.

Assessment care plans are completed a few days after admission, when the case work-up is relatively complete. Brief '24-hour' care plans completed shortly after admission have also been employed. Follow-up care plans for in-patients have usually been completed at weekly or fortnightly intervals during the admission, although longer intervals have been employed with slow moving cases.

A doctor or nurse prepares the draft care plan before a clinical meeting and prints copies for team members. The draft care plan is discussed by the team, amended on the computer after the meeting, and finally printed for the case notes.

Care plans in case notes are currently signed by two senior clinicians on the team. Spaces for signature by patients are optionally included. All redundant paper is shredded for recycling as part of secure information management policy.

In a day hospital setting, care plans are completed after initial assessments, after case reviews and at discharge.

Since the coding time for brief care plans is relatively short, it is possible to code them on computer with shared discussion during a clinical meeting. A quiet lap top computer may be preferable for that purpose.

Care plan reports

The print-out of a care plan is based on a customised care plan template. Formatting of decoded terms is provided automatically by the programme with selectable text layout and text frame styles, including cross bars to separate sections of the report or full box frames. Additional

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text can be edited into the report before printing. Various other kinds of information such as therapeutic information sheets and rating scales may be printed with the report for staff or for clients.

Time costs

The main time components in coded care plan production are the times for draft care plan coding, draft plan printing, team discussion, entering coding revisions on the computer, and final printing. The comparable time components for a dictated and typed multidisciplinary care plan would consist of times for dictation, secretarial word processing/typing, team discussion, re-editing and revision, and retyping.

Team discussion time should be similar for both procedures, although it may be that if a senior team member writes the plan other staff will be less likely to participate in the production process and discussion time will be less.

Coding time depends on the type of care plan. For a full assessment plan, an experienced user usually takes 15 to 20 minutes on the computer. Follow-up care plans are quicker at about 5 to 10 minutes because previous plan contents are copied through and modified for the current care plan. A brief care plan usually requires about five minutes coding time.

Report preparation by the programme using the stored care plan coding and a report template takes up to 20 seconds on a standard PC system, depending on care plan complexity. Final editing and printing using the programme's text processor or a word processor may take a few minutes depending on the printer speed.

Staff who are used to having secretarial assistance and to dictating care plans may find that the process is a little slower than usual. However, cost benefit analyses of the system should take all staff time and production costs into account and it can be of value to avoid secretarial delays. The report can be printed as soon as coding is complete.

Staff who have never had secretarial assistance are provided with a semi-automated care plan production process using coding terms and standard definitions without demands for typing skills.

Coding term issues

One challenge in developing coding for care plans is to manage the number and variety of terms needed to describe psychiatric cases. To communicate effectively, the terms should not be too technical and they may need to be adapted to local language or cultural styles.

Table 1. Coding field term counts for 195 care plans recorded on one ward between January 1993 and June 1994

Field	Mean terms coded per field
Presenting problem	3.5
History of this episode	6.4
Other psychiatric history	7.0
Mental state examination	10.4
Physical disorder	0.4
Personal/domestic issues	3.4
Risks/legal issues	2.4
Current problem list	5.9
Management objectives	8.0
Investigations	0.8
Staff identified	3.8
Case management interventions	9.5

Coding mental illness terms is also challenging because of the relatively high ratio between the number of the potential coding terms for a coding area and the number of codes actually used in any one case. For example, the mental state list used in our full assessment care plan currently contains 452 coding terms of which only a few will be employed in any one case (Table 1).

To manage coding terms effectively, the scope of each coding term list in our system is limited to the topic covered by a database field, and limited to 512 terms in length. Lists are also subdivided into headed coding term groups when the conceptual themes covered by the list appear to require it. Thus, in the mental state list there are 16 coding subgroups, coding for areas such as general appearance and behaviour, psychomotor features, hallucinations or cognitive dysfunction. The maximum number of coding slots for mental state assessment in our system is 20 coding terms per care plan and we have only rarely had to curtail coding to fit within that limit.

Grouped term headings within coding areas are valuable in formatting the presentation of complex coding areas, since they provide category headings under which multiple items are presented. For example, codes for counselling as a case management intervention include counselling about diagnosis, medication, recent life events, marital difficulties and housing problems, each of which would be a separate term within the counselling coding term group in the care plan.

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Adding coding terms

The coding terms in our option lists have been built up over a period of several years. In the early stages of coding term development, when option lists were relatively short, the terms staff needed for a case description were often not present, but new terms are rarely needed now.

If no suitable term for the current issue is found, staff need to create a new term in the option list for that database field in order to complete their current care plan. If staff were not able to add terms, the coding system would almost undoubtedly be rejected since case descriptions would inevitably be inaccurate or incomplete.

The ability to add local terms creates issues for management of coding term standardisation across service areas, a problem which is most marked when large coding term sets such as READ codes are in use and standardisation has to be maintained across the whole Health Service. It is not possible for local staff to wait for months or years while national agreement is reached about whether a term can be employed or not. However, it is also important that local coding protocols use standardised terms necessary for data returns using national coding.

Provision for mapping standard coding terms such as READ codes onto local lists provides a means of extracting and reporting standardised data, as long as the software can cope with the alternate coding standards. At a local service level, it is relatively easy to maintain consistency of coding term development using automatic logging of new coding terms by the computer and regular updating of local terms across local service sites by an audit officer.

Some acceptability issues

The chunking of code groups to match clinical thought patterns in accessible lists has appeared to be important for system acceptability. New users of the system feel at home with grouped terms which match familiar conceptual frameworks and they have relatively little difficulty engaging with the code selection process.

The ability to customise most aspects of the system to suit local service contexts has enabled interested staff to design databases to suit their needs, providing service teams with control of their own data structures without losing the functionality of the main care plan components or sacrificing standardised data reporting.

Table 2. Numbers of terms in care plan option lists in January 1995

Option list title	Terms in list	Groups
Presenting problem	66	4
History of the current episode	245	15
Other psychiatric history	316	16
Mental state features	452	16
Personal/domestic issues	113	8
Risks/legal issues	87	3
Discharge/closure	94	11
Current case management issues	108	9
Outcome rating issues	121	14
Outcome issues severity rating	5	1
Case management objectives	132	8
Investigations	148	13
Case management interventions	274	25

Audit with the coded care plan system

All the coding term data in stored care plans on the computer are available for analysis.

To illustrate the scope of the available information, the mean number of coding terms in each coding section area for 195 assessment care plans collected between January 1993 and June 1994 in an acute male ward are shown in Table 1.

A mean of 61.5 coding terms was stored per assessment care plan, with additional coding in other database records for registration information, investigations and prescriptions.

The numbers of terms and code groups in each of the assessment care plan coding term lists is shown in Table 2. Excluding the staff lists and physical disorder coding, the current number of coding terms used in assessment care plans has grown since 1991 to over 2200 terms and continues to expand.

Audit analyses with that amount of coding provide very extensive sets of tables. At the simplest level, frequency analysis of the codes identifies how often particular items occur in the case set. Analyses using two or three way interactive tables plus stratification or filtering of clinical data provide more complex patterns of information related to case groups and service activity.

Problem oriented approach

Multidisciplinary coding strongly reinforces a multi-axial, problem oriented approach to case

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assessment. For example, issues such as social and financial problems, clinical risks, medication compliance, relapse prevention or health education issues are coded alongside diagnoses because they are important components of multidisciplinary practice, each associated with its own potential intervention list.

Case management problem definitions have routinely expanded beyond diagnostic coding to include separate fields for both day-to-day case management problems, and issues identified separately for outcome assessment.

The audit officer

Having a funded audit officer has been crucial to the care plan development process. It is not yet clear how much audit officer time is needed to support care plan coding in various service contexts.

The audit officer's most important role is not that of entering data on the computer but rather that of providing staff support and education and maintaining the ethos of data collection. Other important tasks for an audit officer include helping with analytic report production, maintaining the hardware, storing backed up data files reliably, and maintaining coding term sets across sites.

Some observed effects on therapeutic team function

Shared coding in a team meeting requires a cooperative process of identifying the core descriptive terms for the history and management of each case. The care plan structure provides the agenda for the discussion and demands a systematic approach. Team discussion of the care plan can be time consuming and may need judicious chairing, particularly with a lively and assiduous group interested in accuracy. Team accountability and the potential for later auditing of case management activities tend to ensure that components of care are well represented.

Five to ten minutes team discussion per care plan is normally sufficient if the case history has been adequately prepared. On busy wards the number of full care plans per meeting will be limited.

Discussing care plan coding is frequently educational. Team members learn a great deal about their cases, and professional activities often benefit. Definitions of terms employed in case descriptions are enhanced. The contrast between meetings with or without care plan discussions tends to suggest that there may be considerable scope for improving care management definitions in clinical settings. However, many services may be insufficiently resourced to cope with the time required for detailed documentation of case management and excessive coding detail has little value.

The hypothesis that case management is enhanced by the focused discussion process has yet to be properly tested. Some assessments of procedural nursing care plans have suggested that they may not improve care delivery (Aidroos, 1991; Buchanan, 1993; Yassin & Watkins, 1993). Rigid use of detailed care plans may hinder competent delivery of care for people with mental disorder, which often requires flexible professional assessment, careful judgement, and on-the-spot negotiation of details.

The ethical issues involved in diverting staff time away from direct client care to provide computerised case management information merit critical evaluation based on experience with both conventional case note recording and use of information systems in each service context. It is easy to spend time on data recording which may be of limited value.

Further issues

Many of the potential ways of using coded care plan systems in health care have yet to be explored.

The coded care plan system provides an opportunity for evaluating how far free, descriptive text could be replaced by coding terms. Reports using coding terms are currently somewhat telegraphic since they are composed of key concepts without the full grammatical structures of normal speech. Highlighting key terms increases clarity, and in practice staff comfortably accept plans which are not written in sentences. However, coding inevitably tends to filter out the fine detail of case descriptions and professional judgement during the process of extraction and standardisation of terms, leaving a need for supplementation of coding terms with descriptive text.

The value of immediate availability of printed case management reports for staff and patients has yet to be assessed. The possible impact on clinical teams or professional roles of the immediate availability of detailed audit information also remains unclear.

Access to a comprehensive set of descriptive terms with satisfactory definitions may help to enhance the standard of professional thinking and it is possible that systematic analysis of the content of professional case management through care plan

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coding systems will help to improve the quality of case management.

Clearly, on the other hand, it is important that care planning remains flexible and professionally appropriate. The absence of prescriptive protocols in the current care plan system, where the case description effectively starts as a blank sheet with several headings, is compatible with professional autonomy in a multidisciplinary team context.

The care plan focus tends to keep clinicians in control of their own information systems while fulfilling service needs for audit and resource identification. Care plan coding is an obvious medium for channelling service information from care-delivering professionals to health service management, and could play a significant role in both the evolution of service management information systems and the relationships between clinicians and their employers.

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Multiple choice questions

1 Care plans may include operational details of:
- a case management interventions
- b anticipated clinical risks
- c physical investigations
- d the patient's daily time schedule
- e costed components of care

2 Potential advantages of coding care plans on computer include:
- a 'on the spot' care plan production
- b a reduced need for clinical judgement in care planning
- c synoptic clarity
- d facilitation of care plan communication within a multi-disciplinary team
- e availability of coded case description and case management data for audit or costing

3 Potential disadvantages of coding care plans on computer include:
- a a requirement for multi-disciplinary case management discussions
- b imprecise selection of coding terms
- c clinicians providing their service with well defined case management data
- d impaired definition of case management in care plans due to lack of coding terms
- e reduced descriptive detail if free text fields are unavailable during care plan preparation

4 Important roles for an audit officer include:
- a ensuring an adequate supply of paper for printers
- b educating staff about the Data Protection Act
- c typing letters for the clinical team
- d maintaining the ethos of clinical data gathering
- e helping with analytic report production
- f managing selected information transfer between clinicians and information service departments

MCQ answers

1	2	3	4
a T	a T	a F	a T
b T	b F	b T	b T
c T	c T	c F	c F
d F	d T	d T	d T
e T	e T	e T	e T
			f T

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