

## Episode of Care: A Core Concept in Family Practice

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The new Institute of Medicine definition of primary care requires that primary care clinicians address the large majority of personal health care needs of their patients. The unit of assessment for this is the *episode of care*, defined as a health problem from its first encounter with a health care provider through the completion of the last encounter. An episode of care is distinct from an episode of disease or illness.

In this article, episode-of-care data from Dutch family practice, classified with the International Classification

of Primary Care, illustrate this approach. Data on women 25 to 44 years of age are presented. The top 20 new reasons for encounter and new episodes of care as well as the relations between a reason for encounter (headache) and disease (sinusitis) support the potential of episode-oriented epidemiology and some important clinical considerations in family practice.

*Key words.* Primary care; family medicine; episode of care, ICPC; family physicians.

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The new Institute of Medicine definition of primary care is not yet operational since it is unknown whether its description fits reality.<sup>1</sup> Different primary care clinicians, ie, family physicians, pediatricians, general internists, and nurse practitioners, have different frames of reference, training programs, and views on their involvement in the delivery of care.<sup>2-4</sup> Rapid changes in the United States health care system complicate the operationalization of the definition considerably, especially with regard to the central issue of the large majority of personal health care needs.<sup>5,6</sup>

The episode of care is designated as the unit of assessment for deciding whether a clinician indeed provides care for the large majority of health care needs of persons who consider him or her their usual provider.<sup>1</sup> The term *episode of care* refers to a health problem from its first encounter with a health care provider through the completion of the last encounter related to that problem (Figure 1).<sup>7-9</sup> An episode of care, therefore, differs from an

*episode of disease*, which is a health problem from its onset through its resolution or until the patient's death, and an *episode of illness*, which is the period during which a person suffers from symptoms or complaints experienced as an illness. Not every disease and certainly not every illness results in an episode of care. Most episodes of care, however, are part of an episode of disease and, less often, of illness. *Health maintenance episodes* can be considered a special form of episodes of care.

The prevalence of an episode of care consequently is lower than the prevalence of a given disease in the population. For some diseases, the prevalences will be similar, as with fractures, strokes, metastatic malignancy, and blindness. More often, however, there will be considerable discrepancies between the actual demand for care and the potential need as expressed by data from population studies (disease), from health interviews (illness + disease), and from utilization studies (care). In the United States, the National Ambulatory Medical Care Survey,<sup>10</sup> National Health Interview Survey,<sup>11</sup> and National Medical Expenditure Survey<sup>12</sup> are major sources for such data.

### A Core Concept for Family Practice

The episode of care is central to the use of the International Classification of Primary Care (ICPC), developed by the World Organization of Family Doctors. This sys-

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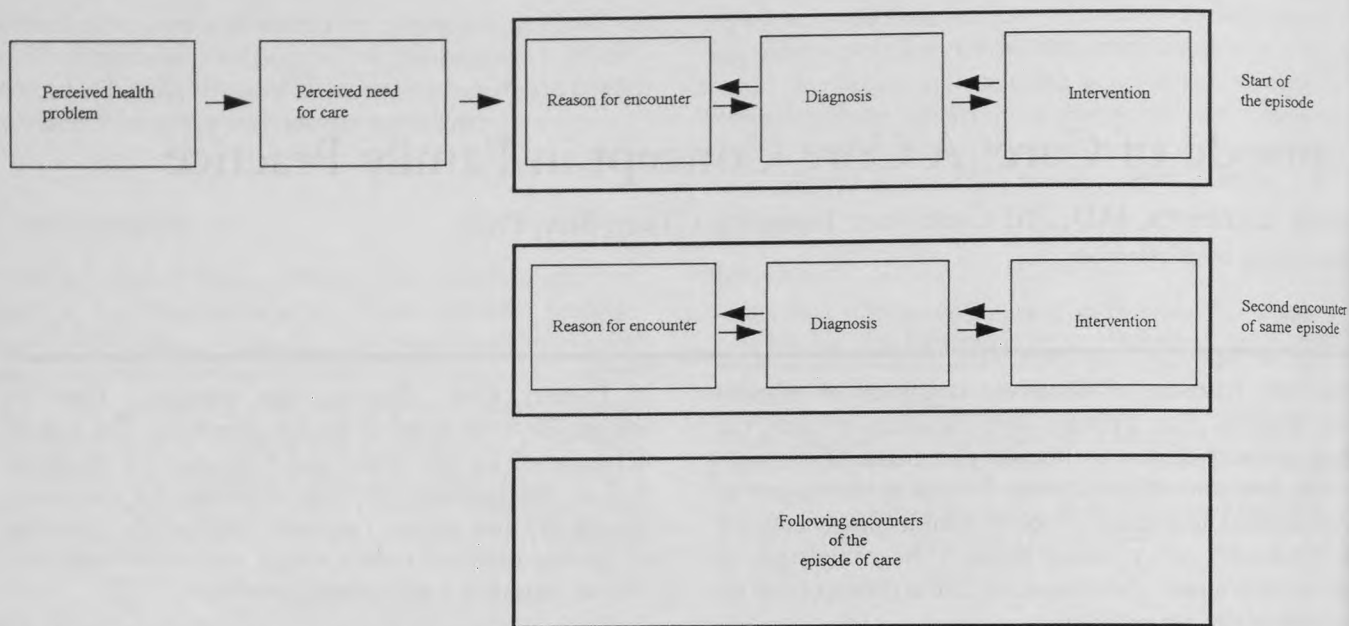


Figure 1. Elements of an episode of care

Table 1. Top 20 New Episodes of Care for Women Aged 25 to 44 Years

ICPC Code	New Episode	No. of Episodes	Incidence*	% of New Episodes
X37	Pap smear	1313	86.6	3.6
R74	URTI (head cold)	1299	85.7	3.6
A97	No disease	1295	85.4	3.6
R75	Sinusitis acute/chronic	788	52.0	2.2
W78	Pregnancy confirmed	730	48.2	2.0
W11	Family planning/oral contraceptive	703	46.4	1.9
L03	Low back complaint (excluding radiation)	654	43.1	1.8
X72	Urogenital candidiasis proven	556	36.7	1.5
S88	Contact dermatitis/other eczema	520	34.3	1.4
L18	Muscle pain/fibrositis	517	34.1	1.4
A04	General weakness/tiredness	512	33.8	1.4
H81	Excessive earwax	439	29.0	1.2
A85	Adverse effect of medical agent in proper dose	388	25.6	1.1
U71	Cystitis/other urinary infection NOS	379	25.0	1.0
R78	Acute bronchitis/bronchiolitis	351	23.2	1.0
X07	Menstruation excessive/irregular	347	22.9	1.0
X84	Vaginitis/vulvitis NOS	344	22.7	1.0
S74	Dermatophytosis	334	22.0	0.9
R77	Acute laryngitis/tracheitis	321	21.2	0.9
L01	Neck symptoms/complaints (excluding headache)	320	21.1	0.9
Total top 20		12,110		33.5

\*Number of episodes per 1000 patients enrolled with a family physician per year.  
 ICPC denotes International Classification of Primary Care; URTI, upper respiratory tract infection; NOS, not otherwise specified.

Table 2. Reason for Encounter at the Start of Episode of Care for Women Aged 25 to 44 Years

ICPC Code	Reason for Encounter	No. of Reasons for Encounter	Rate*	% of All New RFEs
R05	Cough	1395	92.0	3.5
X37	Pap smear	1349	89.0	3.4
A04	General weakness/tiredness	1089	71.8	2.7
N01	Headache (excluding N02, N89, R09)	1000	66.0	2.5
R21	Symptom/complaint throat	933	61.6	2.3
S04	Local swelling/papule/lump/mass	900	59.4	2.3
L03	Low back complaint (excluding radiation)	836	55.2	2.1
D06	Other localized abdominal pain	792	52.2	2.0
S06	Local redness/erythema/rash	681	44.9	1.7
X17	Symptom/complaint pelvis	543	35.8	1.4
L01	Neck symptom/complaint (excluding headache)	512	33.8	1.3
A03	Fever	495	32.7	1.2
W01	Question of pregnancy (excluding W02)	479	31.6	1.2
H01	Ear pain/earache	473	31.2	1.2
S02	Pruritis (excluding D05, X16)	451	29.8	1.1
X07	Menstruation excessive/irregular	429	28.3	1.1
X15	Other symptom/complaint vagina	426	28.1	1.1
R74	URTI (head cold)	411	27.1	1.0
R09	Symptom/complaint sinus (including pain)	405	26.7	1.0
P01	Feeling anxious/nervous/tense	403	26.6	1.0
Total top 20		14,002		35.3

\*Number of reasons for encounter per 1000 patients per year.

ICPC denotes International Classification of Primary Care; RFE, reason for encounter, URTI, upper respiratory tract infection.

tem is designed to characterize the three essential elements of primary care episodes: the patient's reason for the encounter, the diagnostic label, and the diagnostic and therapeutic intervention (Figure 1).<sup>13-15</sup>

The content of primary care has been described in several epidemiologic studies.<sup>14,16-18</sup> From these studies, the family doctor emerges as the prime candidate to meet the requirement of dealing with the large majority of personal health care needs.<sup>19</sup> Everyone for whom a family physician is the usual provider of care can present to him or her with any health problem at any stage of development. These problems as distributed represent the large majority of personal health care needs for different sex and age groups and are globally known, in both the United States and elsewhere.<sup>10-12,20-22</sup>

In addition to providing personal continuity of care, family physicians also provide factual continuity of care when they structure and update the medical life histories of their patients over time, taking into account the changes in medicine, in society, and in their patients' lives.<sup>19</sup>

The main goal of this article is to illustrate how the content of family practice can be characterized in an episode-oriented epidemiologic model.

## Methods

In the Netherlands, patients cannot seek specialist care without a referral by the family physician. This circumstance allows a rather close approximation of the large majority of personal health care needs. The Dutch health care system, in which family physicians are designated as primary care physicians, differs from that in the United States, where not only family physicians but also general internists, pediatricians, and gynecologists serve as primary care clinicians.

Data on patients enrolled (listed) with a family physician are presented in the form of standard presentations with a 1-year time window (Transition project of the Department of Family Practice, University of Amster-

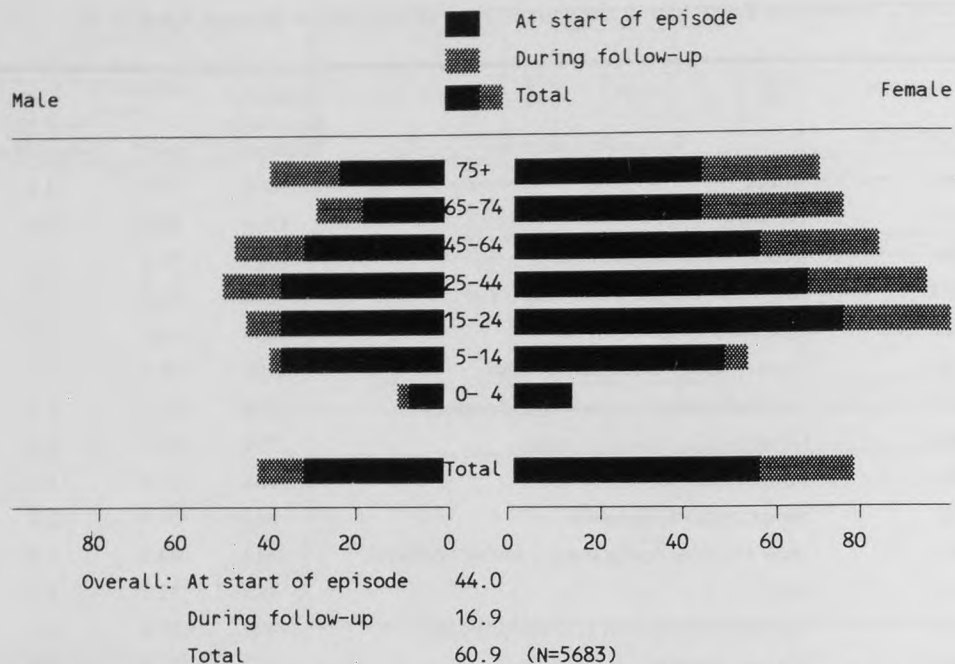


Figure 2. Number of times headache (International Classification of Primary Care N01) was the reason for encounter per 1000 patients per year.

dam<sup>23</sup>). In the period 1985 to 1994, complete data on 236,023 episodes of care during 93,297 patient years were routinely registered and coded by 43 family physicians. Data on episodes of care in women 25 to 44 years of age have been selected for use in this paper to provide an indication of the potential involvement of different primary care providers, ie, family physicians, general internists, and gynecologists, in the large majority of the health care needs in this group.

The International Classification of Primary Care as an ordering principle is used to describe two aspects of episodes of care: data aggregated on the level of a sex and age group, and data aggregated on the level of a single reason for encounter or diagnosis in a sex and age group.

## Results

A total of 15,158 patient years for women 25 to 44 years of age are included. Of these, 11,570 visited their family physician at least once during the registration year (visiting patients). The top 20 new episodes (Table 1) represent 33.5% of all new episodes. The incidences represent the annual number of new episodes per 1000 enrolled women between the ages of 25 and 44 years. Women in this age group have an average of 2.9 episodes per year, of which 2.4 are new and 0.5 are old in the sense that they refer to chronic conditions, such as hypertension, diabetes, migraine, asthma, and depressive disorder. For the

11,570 visiting patients, these numbers are 3.8 and 3.1, respectively.

The percentages in the last column of Table 1 indicate the relative importance of each episode, whereas the absolute numbers indicate the power of a large routine database. Papanicolaou (Pap) smears, upper respiratory tract infections, and "no disease" (an episode title mainly referring to prevention and health maintenance) are the most common new episodes. Sinusitis, pregnancy, and the use of an oral contraceptive are also high-incidence episodes.

Table 2 lists the reasons for encounter presented by the patient at the start of episodes. Cough, request for a Pap smear, fatigue, headache, complaints of sore throat, low back pain, and abdominal pain are predominant. Although requests for an intervention, such as a Pap smear, sometimes initiate an episode, such requests are much more prevalent during follow-up.

Tables 1 and 2 provide a global insight into the diversity of new health problems in this sex and age group, illustrating the primary care provider's need for broad clinical expertise.

### *From Reason for Encounter (Headache) to Diagnosis (Sinusitis)*

Episode data collected with ICPC can also reflect the decision-making process in family practice with its characteristic distribution of prior probabilities. This is illus-

Table 3. Top Ten Diagnoses Received by 1000 Women Aged 25 to 44 Whose Reason for Encounter at the Start of an Episode Was Headache (N01)

ICPC Code	Diagnosis	No. of Diagnoses	Prior Probability of Diagnosis, %
N01	Headache (excluding N02, N89, R09)	204	20.0
R75	Sinusitis acute/chronic	166	16.2
N02	Tension headache	158	15.5
N89	Migraine	69	6.8
R74	URTI (head cold)	51	5.0
L01	Neck symptom/complaint (excluding headache)	35	3.4
A77	Other viral diseases NOS	34	3.3
L18	Muscle pain/fibrositis	19	1.9
L83	Syndromes of cervical spine	19	1.9
R80	Influenza (proven) without pneumonia	16	1.6
Total top 10		771	75.4
Total overall		1022	100.0

ICPC denotes International Classification of Primary Care; URTI, upper respiratory tract infection; NOS, not otherwise specified.

trated by means of the relation between a common reason for encounter and a common episode of care: headache (N01) and sinusitis (R75). Each year, headache is the reason for initiating an episode for 6.6% of women between the ages of 25 and 44 years, whereas it is the reason for follow-up for another 3% (Figure 2). Men use this reason for an encounter considerably less often, both at the start of an episode and during follow-up. The prior distribution of the final diagnoses of episodes starting with headache as the reason for encounter is characteristic: headache, sinusitis, and tension headache appear to be far more likely than migraine, with a prior probability of

6.8% (Table 3). For the purposes of this paper, the inclusion criteria of International Classification of Health Problems in Primary Care (ICHPPC)-2-Defined have been used to establish diagnoses.<sup>24</sup> The reasons for encounter at the start of the episode for sinusitis are presented in Table 4, indicating that the most frequent ones in this sex and age group are symptoms the patients themselves relate to the sinus. Other frequent reasons for encounter are headache, upper respiratory tract infection, cough, and fever. Almost all patients were physically examined: imaging occurred in 10% of episodes, and 3.6% were referred to a specialist. The large majority are treated

Table 4. Top 10 Reasons for Encounter at the Start of an Episode for Sinusitis (R75) for 788 Women Aged 25 to 44 Years

ICPC Code	Reason for Encounter	No. of Reasons for Encounter	% of All Episodes for Sinusitis
R09	Symptom/complaint sinus (including pain)	280	27.8
N01	Headache (excluding N02, N89, R09)	166	16.5
R74	URTI (head cold)	101	10.0
R05	Cough	92	9.1
R75	Sinusitis acute/chronic	86	8.5
A03	Fever	37	3.7
R07	Sneezing/nasal congestion	36	3.6
R01	Pain attributable to respiratory system	31	3.1
R21	Symptom/complaint throat	26	2.6
A04	General weakness/tiredness	24	2.4
Total top 10		879	87.1
Total overall		1009	100.0

ICPC denotes International Classification of Primary Care; URTI, upper respiratory tract infection.

Table 5. Comorbid Episodes Among 756 Women Aged 25 to 44 Years Being Treated for Sinusitis (R75)

ICPC Code	Comorbidity	No. of Comorbid Episodes	% of All Episodes	Prevalence*
R74	URTI (head cold)	146	4.5	193
W11	Family planning/oral contraceptive	106	3.2	140
A97	No disease	102	3.1	135
X37	Pap smear	84	2.6	111
R75	Sinusitis acute/chronic	72	2.2	95
L03	Low back complaint (excluding radiation)	53	1.6	70
R78	Acute bronchitis/bronchiolitis	51	1.6	67
X72	Urogenital candidiasis (proven)	48	1.5	63
W78	Pregnancy confirmed	46	1.4	61
A04	General weakness/tiredness	42	1.3	56
Total top 10		750	23.0	992
Total overall		3267	100.0	4321

\*Number of comorbid episodes per 1000 patients with sinusitis (R75) in the registration year.

ICPC denotes International Classification of Primary Care; URTI, upper respiratory tract infection.

NOTE: The mean number of comorbid episodes per patient with sinusitis was 4.3 per year.

by family physicians, who often prescribe antibiotics. Episodes of care of sinusitis in this sex and age group last less than 4 weeks in 92% of the cases. Comorbidity is very important: these women have on average 4.3 other episodes during the same registration year, with a high prevalence of upper respiratory tract infection (19.3%), oral contraception (14%), and a recurrent episode of sinusitis (9.5%) annually (Table 5). No disease (A97) and Pap smear (X37) refer mainly to preventive interventions.

## Discussion

Episode-oriented patient data from family practice permit a more thorough assessment of the extent to which clinicians are involved in the large majority of health care needs of their patients.<sup>22,25</sup> Patients seek primary care for a variety of health problems, with the reasons for encounter taking the form of symptoms or complaints, diagnostic labels, and requests for interventions.<sup>26</sup> Comorbidity illustrates that very different episodes can and often do occur simultaneously, ie, in the same year.

The question of whether primary care clinicians actually meet the large majority of personal health care needs of their patients can be answered only on the basis of sufficient empirical data. Data available from the United States provide an impression of the distribution of episodes of care for a certain provider type.<sup>10</sup> Data on the episodes of care patients bring to the same provider, however, are practically nonexistent. In principle, a pediatrician and a family physician can both be responsible for the

large majority of health care needs in children<sup>27</sup>; however, it is difficult to see how anyone other than the family physician can serve adults in this capacity.

Experiences from other countries are helpful, but the real challenge will be to use these tools to collect an episode-oriented database that is appropriate for the unique conditions of American primary care.<sup>28</sup>

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