Diseases, Chronic Care, and Primary Care

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The purpose of this presentation is to explore the concepts of “disease” and “chronic disease” and to show why a more appropriate focus is on a continuum of care (“primary care”) for all people and populations rather than on care for targeted diseases.
• Most diseases are not discrete biological entities.
• Specific diseases do not exist in isolation from other health problems.
• The course of most chronic diseases is not predictable.
• Many health problems are “chronic” but are usually not considered so.
• Focusing care on selected chronic conditions is not likely to improve the health of populations and may not improve the health of individuals.
• A more appropriate way to organize care is through person (not disease) focused health services that take into account different degrees of “morbidity burden” in people and populations.
The IOM report, Crossing the Quality Chasm, urges selecting priority conditions for attention to the quality of care. The list from which they should be chosen includes cancer, diabetes, emphysema, high cholesterol, HIV/AIDS, hypertension, ischemic heart disease, stroke, and perhaps also arthritis, asthma, gall bladder disease, stomach ulcers, back problems, Alzheimer’s, depression, anxiety disorders.

Why aren’t undernutrition, occupational diseases, osteoporosis, low birth weight and prematurity, or virtually any childhood disorder (except asthma) considered high priority? Who should decide what a priority disease is? The disease experts?

These data were obtained from medical and pharmacy claims data over 12 months from four companies, and included about 58,000 employees. Survey data about health and work performance were obtained from about 15,000 of these. The 27 most common conditions were selected and recorded if they were the primary diagnosis on the claims form.

This chart identifies the top ten health conditions occurring on medical claims and pharmacy claims. Conditions costing the most in terms of medical and pharmacy costs are in the left column; all but two are conventional biomedical diagnoses. The middle column shows that the most costly conditions in terms of lost productivity are primarily symptoms or signs; only three are conventional diagnoses. Lost productivity costs were more than four times medical and pharmacy costs. As a result, total costs reflected the occurrence of symptoms and signs rather than conventional medical conditions. That is, the mostly costly problems to employers are people’s problems, not their diagnoses.
Diseases

- are professional constructs
- can be and are artificially created to suit special interests; the sum of deaths attributed to diseases exceeds the number of deaths
- do not exist in isolation from other diseases and are, therefore, not an independent representation of illness
- are but one manifestation of ill health

Sources:
What characterizes illness is its variability, not its average manifestations. Virtually all of the conclusions of randomized controlled clinical trials are based on the average response. Variability, which underlies the genesis and progression of illness, the role of risk factors, and the impact of interventions, goes unrecognized.

Everyone knows that cardiovascular disease is the leading cause of death, but what is it?

It is “hypertensive DISEASES, ischemic heart DISEASES, rheumatic fever, pulmonary heart disease and DISEASES of the pulmonary circulation, OTHER FORMS of heart disease, cerebrovascular DISEASES or stroke, DISEASES of veins, lymphatic vessels, and lymph nodes, OTHER AND UNSPECIFIED DISORDERS OF THE CIRCULATORY SYSTEM, AND congenital MALFORMATIONS, or birth defects of the circulatory system.”

What and for whom is there benefit from calling it a disease – or the leading cause of death?

There appear to be many disorders included under the rubric of diabetes: insulin secretion; insulin transport; zinc-binding to insulin; and pancreatic islet beta cell development.

**IS DIABETES A DISEASE? DOES IT MAKE SENSE TO ASSUME THAT GUIDELINES FOR THE IDENTIFICATION AND MANAGEMENT OF DIABETES APPLY TO ALL “DIABETICS”?**

In a relatively small-scale study, diabetics who have weight loss are five times more likely to have their diabetes disappear than diabetics who have standard diabetes care.

Questions: Is diabetes a “chronic disease”? Is it a disease?

If the association between obesity and diabetes is absent in people with low concentrations of persistent organic pollutants, and the association becomes stronger as the concentration of these pollutants rises, is obesity a risk factor for diabetes? Is diabetes a single disease?

If three diabetics per one thousand per year die from the implementation of supposedly evidence-based treatment, is diabetes a single disease?

There is broad variation in breast cancer risk among carriers of BRCA1 and BRCA2 mutations.

Question: Is BRCA1 and BRCA2-related breast cancer a disease?

If a 90-year-old woman dies two months following hip fracture, did she die from an acute disease or a chronic disease?

What is the “cause of death” likely to be coded as?
If oral contraceptives are protective on epithelial and non-epithelial cervical cancer but not on mucinous cervical cancer, is cervical cancer a single disease?

COPD is a chronic systemic inflammatory syndrome with complex chronic comorbidities. Patients with COPD mainly die of non-respiratory disorders such as cardiovascular disease or cancer.

COPD is a heterogeneous disease process. Although exacerbations of COPD, especially those defined as being infectious, are quite frequent, the number of randomized placebo-controlled trials of antibiotics is surprisingly small.

Sources:
Calverley PMA, Rennard SI. What have we learned from large drug treatment trials in COPD? Lancet 2007; 370(9589):774-785.
When occurring in the same individual, BMI greater than 30, systolic blood pressure greater than 140, and blood cholesterol greater that 250 mg/dL are associated with a six-fold increased odds of Alzheimers disease.

What type of disease is Alzheimers? What is the disease?

Hypothyroidism is three times more likely in women with rheumatoid arthritis than in the general population. Women with both conditions have a fourfold higher risk of cardiovascular disease than euthyroid women with arthritis, independent of conventional risk factors. Inflammation and autoimmunity are implicated in vulnerability to a wide variety of “chronic” diseases – and they may well be “acute”.

What Is a Chronic Disease?

Generally defined as persistence or recurrence, usually beyond one year
Chronic Disease: Expanded Definition

- Incurable
- Complex “causation”
- Multiple risk factors
- Long latency
- Prolonged course
- Associated with functional impairment or disability

Not all chronic diseases are manifested year to year.

Acute diseases sometimes behave as if they were chronic, recurring year to year.

Only a minority of common chronic diseases or conditions are currently candidates for the vast majority of chronic disease management programs.

Acute and chronic conditions share a characteristic: inflammation.
Of all global deaths in 2005, 60% were said to be caused by chronic diseases, principally cardiovascular diseases (32%), cancers (13%), and chronic respiratory diseases (7%). Data such as these are used to argue that chronic diseases are of growing and epidemic importance as causes of death.

Question: What is the appropriate target for the percentage of deaths in the world that are attributable to chronic diseases? Isn’t there a case to be made that perhaps ALL deaths should be due to chronic diseases, with acute illnesses falling towards zero percentage?

There is more variability in disease manifestations and persistence within diseases than across diseases because:

- diseases are not necessarily unique pathophysiological entities
- variability in diagnostic styles and practices
- presence of comorbidity
People and populations differ in their overall vulnerability and resistance to threats to health. Some have more than their share of illness, and some have less. Morbidity mix (sometimes called case-mix) describes this clustering of ill health in patients and populations.
The challenges in primary care practice are person-focused rather than disease-focused. Most people have more than one health problem, increasingly as they age. Therefore, attention to health needs in primary care requires an awareness of the simultaneous presence of more than one health problem, which must be taken into account in providing person-focused care, at the very least in order to avoid conflicting management strategies.
Comorbidity is the concurrent existence of one or more unrelated conditions in an individual with any given condition. Multimorbidity is the co-occurrence of biologically unrelated illnesses.

For convenience and by common terminology, we use comorbidity to represent both co- and multimorbidity.
In a general non-elderly population of patients, at least 50% have more than one type of diagnosis in a year. At least 10% have 5 or more types of different diagnoses in a year.

Source: HMO health plan with 500K members.
As thresholds for diagnosing disease are lowered over time, the variability within “diseases” will increase even further, as will the prevalence of multiple simultaneous or sequential diseases.

With progressively decreasing thresholds for diagnosis of disease, and possibly with real increases in some diseases, the prevalence of diseases under treatment is increasing rapidly throughout the world. This chart shows the very large increases in prevalence of particular diseases in the US in the fifteen years between 1987 and 2002. As this information comes from populations with private insurance, the estimates of prevalence undoubtedly understate the true prevalence of disease in the entire population, as people without insurance have more illness. In five of the 10 conditions, the prevalence has more than doubled in the fifteen years; in the case of hyperlipidemia, the prevalence has increased over four-fold. Thus, at the same time that mortality rates have been increasing, the treated prevalence of major illnesses has been increasing.
Socially disadvantaged people are more likely to have a large number of different diagnoses as compared with those who are more socially advantaged. This diagram shows that those enrolled in community health clinics for low-income people in the US are at least 3 times more likely to have more than 5 different types of diagnoses in a year. As socially disadvantaged people are less likely to receive adequate health care, the greater health disadvantage shown in this diagram is likely to be an underestimation of the increased morbidity among socially disadvantaged people.
The data in this chart, based on experiences in the United States, show that the best predictor of subsequent costs of care is the ACG morbidity burden measure (number of different types of diagnosed morbidity – ADGS – or number of different types of serious (major) morbidity types). Neither hospitalization nor costs in the prior year predicted subsequent resource use as well as the morbidity measure. (Not shown is the ACG measure of combinations of types of morbidity – which does as well or better for uses of the ACG system that concern utilization of different types of morbidity and prediction of subsequent morbidity.)
This graph, concerning people of age 65 and over in the US, shows that rates of hospitalization for causes that should be preventable by good primary care, rates of complications during hospitalization, and costs of care increase rapidly with increases in comorbidity (as measured by the number of types of chronic condition per person). That is, comorbidity is associated with higher costs, higher hospitalization for preventable conditions, and more adverse effects.

The greater the morbidity burden, the greater the persistence of any given diagnosis.

That is, with high comorbidity, even acute diseases are more likely to persist.
This diagram shows that as comorbidity increases, so does the likelihood of a repeat diagnosis of urinary tract infection (UTI) (which is generally not considered a chronic disease) in the year after a previous diagnosis. Those with a diagnosis of UTI in one year are not very likely to have it diagnosed in the subsequent year if they have little or no comorbidity, but are more likely to have a repeat diagnosis with increasing comorbidity. The same is the case for other conditions. That is, persistence of a health condition is more likely in the presence of other health conditions.
These data, from one province in Canada, show that there is little difference in resource use for people with only acute conditions, people with any chronic conditions, or people with only serious chronic conditions when the morbidity burden is the same. However, increasingly higher morbidity burden (i.e., more multimorbidity) is associated with progressively higher resource use, and the increase is the same regardless of the type of diagnosis (acute, chronic, major chronic). Chronic conditions alone do not, by themselves, imply high need for resources.

In a study of adults of ages 20-79 seen over a two-year period, the number of different types of morbidity was the leading influence on both the number of primary care and specialist visits. The second most important influence was the extent of morbidity, that is, the pattern of different combinations of different kinds of diagnoses as reflected in resource use. Other influences were weaker.
It’s comorbidity that is the problem, not chronic diseases.
What is needed is person-focused care over time, NOT disease-focused care.
PERSON-FOCUSED CARE means taking into account all life-threatening, disability-inducing, and health-compromising conditions that people encounter in daily life, whether they are the conventionally “chronic” conditions, other “chronic” conditions (such as incontinence, post-stroke impairment, and hearing loss), chronic conditions that are acute but likely to recur (such as sinusitis and urinary tract infection), or acute conditions that predispose people to other conditions and to disability.
What Is the Appropriate Care Model?

- Primary care that meets primary care (not disease-specific) standards*
- Specialty referrals that are appropriate, i.e., evidence-based**
- Specialty care that meets specialty care standards**

*exist
**do not exist
Although current knowledge permits development of some disease-oriented quality standards, there are NO standards for adequacy of person-focused care, appropriateness of referrals, or adequacy of specialty care.
Disease-oriented guidelines have limitations when people also have other diseases (i.e., most people).

- Relative importance of treatment to overall health must be considered.
- Interacting and contraindicated medications must be avoided.
- Worsening of overall health is a threat.
Why Do Current Concepts of “Chronic Disease” Only Focus on a Small Subset of Chronic Health Needs in Populations?

- Pharmaceutical company interests in conventional diseases, and in the creation of new diseases treatable by drugs?
- Vested interests of medical academia/specialty societies in conventional diseases?
- Clinical rather than population focus in determining priorities for intervention?
- Focus on meeting patient demands instead of population needs?
The global imperative is to organize health systems around strong, patient-centered, i.e., Primary Care.

A disease-by-disease approach will not address the most serious shortfall in achieving the health-related Millennium Development Goals. It will also worsen global inequities. Those exposed to a variety of interacting influences are vulnerable to many diseases. Eliminating diseases one by one will not materially reduce the chances of others.

Sources: