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Perspective

Time after Time — Health Policy Implications of a Three-Generation Case Study

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Conventional wisdom holds that the redesign of health care requires stepping back from the issues of individual patients and analyzing patterns of outcomes and costs for large patient populations.

As practicing primary care physicians, we think a useful, complementary perspective might result from doing the opposite: looking intensely at the health and health care of an individual but widening the lens through which that patient is viewed. We wanted to consider a patient's entire life story — and more.

More, in one recent instance, turned out to be three generations of a single family being cared for by the same primary care physician, who recognized that similar issues were arising in each generation with discouraging predictability. Our timeline was derived from a detailed review of medical records of Muriel (born 1935), her daughter Janine (born 1958), and Janine's son Joshua (born 1977). We used information from the medical records of these three patients to derive a rough estimate of the costs of their care over the year leading up to the chart review.

This three-generation case study shows the intertwined effects of poverty, depression, alcoholism, drug addiction, unemployment, domestic violence, and occasionally incarceration on individual family members and the family as a whole. Each family member was born into a chaotic social context, and then social and presumably some genetic factors combined to lead to a downward personal spiral. If records had been available for Muriel's father and grandmother, we would in all likelihood have had a five-generation case study with similar themes.

The case study revealed what will come as no surprise to primary care physicians: that "social determinants of health" actually do determine health. The life stories of these three people are punctuated by health care events: fractures, hospitalizations (for heart failure, chronic obstructive pulmonary disease, liver disease, kidney disease, seizures, and gastrointestinal bleeding), suicide attempts, and psychiatric admissions. Patterns of behavior associated with deprivation and mental

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No contact with Age 70: Charged with Age 78: Lives alone, family, intermittent arson after fires caused is increasingly contact with community by drinking, smoking, immobile, attends mental health and falling asleep; day center less services, counseling attempted eviction; frequently, receives and support from difficulties with neighbors; social care 2x/day elder services, financial problems; and support from attends day care social services involved elder services	 Age 65: Age 65: Age 69-70: Age 70+: Mitral notes admission: ED visits and valve disease, terol, hip replace- king ment, compli- related to alcohol COPD, cataracts, ing: cated by and falls; fractured osteopenia; tidney disease and division diagnosed RMI, 35; takes prines 	Age 53: House- Age 50+: Enhanced bound owing to support from social to exploitation, anxietry: OT worker, no contact difficulties help with with family with neighbors modifications 2013	Age 32: Age 42: Age 52: Asthma, Age 54: Prolonged Suicide COPD, esophageal Heavy smoking: psychiatric attempt stricture; admis- frequent Age 50: sion with admosol binges; bipolar and frective Age 50: sion with admis- bipolar and liver damage Age 50: sion with adm, 23.3. high liver damage Age 53: takes 8 disorders Age 32–45: Overdose, medications diagnosed Multiple extended admission, alcohol and detox; pain clinic heavy smoking for back pain	der Age 36: Domestic Nollence, violence, Prison sentence sentence 2013	Age 26: Age 30: Age 32: Heavy Admission with Admission smoking and septicemia, with GI alcohol use; infected IV site bleeding BMI, 40; high cholesterol; drug abuse
No c ith Domestic abuse; Brief marriage, family, ris, with 1 daughter, relationships, contact w er Janine placed no contact service ant in care, social with family, and si Daughter services involved attends day elde Janine born center 4–5x/wk atten	Age 24:Age 40 - 44:Age 50:Age 62:Addicted toMultiple visitsHypertensionChest pain;prescriptionand hospitalizationsdiagnosedcardiologist notesdrugsto withdraw fromand treatedhigh cholesterol,drugstrugs: "fits," probablyand drinking;and drinking;and day hospitaland drinking;Age 61:GP and day hospitalwithdraw fromvisits for depression and hipalcohol andpain; assessed by orthopedistberzodiazepines	Age 17: Child Briefly protection employed issues, baby Age 30: Bullied at since then at 1 mo abusive Age 30-5 school owing unemployed to weight; Son Joshua Age 24: worker, worker, eaves school born Marries	Age 16:Age 28:Age 31:Age 32:WeightEpilepsy Admitted toProlonged2311bdiagnosedliver unit,psychiatric(104 kg)liver damageand strongedand strongedMultipleoverdoseaffectivediagnosedsuicideattemptsattemptsdiagnosed	Abusive Age 16: babyhood, child Age 2: Age 14: Youth Offender protection issues, Adopted; has Antisocial Unit; leaves removed to behavioral behavioral school and foster care problems truancy home	Age 18 mo: Fractured skull, Cannabis, cigarette burns; opiate abuse admitted for nonaccidental injuries
Age 16: Age 22: Domestic Leaves school, Married w violence, has many short- 2 daughte abusive term jobs, no furth mother, doesn't get employm divorced along with parents people	Age 15: Age 17: Personality Prolonged disorder and inpatient depression stay in a diagnosed psychiatric unit	Farnily breakdown, mother mentally ill, Domestic period in B violence, foster care, sch abusive social services to childhood involved lear	Age 7: Age 15: Depression Suicide diagnosed attempt, inpatient admission Gor a few Gor a few for a few corvulsions		Born: 1977
Events Ervents Ervents Frandmothers frandmothers frather alcoholism depression depression Murielon	Health Care Contacts	Life Events	Health Care Contacts	ətinəvə 2tnəvə	Health Care Contacts

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Service	Mu	Muriel	Jan	Janine	sol	Joshua
	No. of Contacts	Cost in U.K.£	No. of Contacts	Cost in U.K.£	No. of Contacts	Cost in U.K.£
Accident and emergency (ED) attendances	ø	1,032	2	258	6	1,161
Hospital admissions	4	10,120	2	5,060	2	5,060
Outpatient visits	13	2,626	£	606	2	404
General practitioner appointments	20	1,080	16	864	5	270
Home visits	1	54	ε	162		
Out-of-office-hours visits			9	324		
Community referrals			2	108		
Other						
Health care	Intermittent prolonged community nurse input; intermittent contact with community mental health services	mmunity nurse input; :ommunity mental	Intermittent contact with community mental health services; has a community psychiatric nurse, use of crisis house regularly, community psychology	ommunity mental munity psychiatric nurse, y, community psychology		
Social care	4x weekly day center; counseling and support from elder services; 6 mo of package of care from social services; OT modifications to her home	counseling and support from of package of care from social tions to her home	care plan at enhanced level Named social worker on case plan; OT assessment for provision of equipment and home adaptations	l ise plan; OT assessment and home adaptations		
Incarceration						40,000

PERSPECTIVE

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Panel A shows a timeline of the health care contacts and other life events of Muriel, Janine, and Joshua, and Panel B shows the numbers of various types of health care contacts for each general practitioner; IV intravenous; To convert U.K. pounds to U.S. dollars, multiply by 1.63. BMI denotes body-mass index, the weight in kilopulmonary disease; ED emergency department; GI gastrointestinal; GP of the three patients in 2012–2013, along with the estimated associated costs. grams divided by the square of the height in meters; COPD chronic obstructive therapy. and OT occupational illness have led to the development of a textbook range of chronic conditions.

Data are important, of course, but numbers sometimes imply an order to what is happening that can be misleading. Stories are better at capturing a different type of "big picture." The chaos of the timeline shown here mirrors the chaos of these people's lives and that of the systems that seek to support them. Although their clinicians fully understand the effects of social and mental health issues on physical health, these patients "disappeared" in the transition to adulthood, only to reappear to the health care system as the effects of their behavior patterns kicked in. And as the needs of these patients became more complex, so did the demands on the medical and social systems around them.

Our clinical colleagues who have reviewed this timeline have had a range of reactions, including frustration that the patients themselves have not been willing or able to take more control of their social and medical problems. But one thing that every clinician immediately sees is that his or her own ability to change the overall trajectory of such patients' health issues through traditional medical means is limited at best. It feels as if we are medical physicians facing a patient with a surgical abdomen. We know that the tools at our disposal are not going to work.

Nevertheless, from a pragmatic perspective, when we are the physicians caring for such patients, our jobs are to help these very real human beings - who may, like Muriel, Janine, and Joshua, have their considerable charms. Yet we also have roles as stewards of society's resources,

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which must be used to provide care for everyone. A rough estimate of the costs of providing care and other social services to these three individuals over the year before the chart review was approximately £1 million (\$1.68 million). Not all these costs are accounted for by traditional "health care" — for example, there's the estimated £40,000 but they all represent spending of taxpayer funds that could have been used in some other good way. We think these cost estimates are actually conservative and that the real total health care and social costs for the three patients are higher.

Of course, these three patients are not the problem. In fact, interdependency of social and health issues affects patients of all social strata and with all types of medical conditions. Accordingly, we believe that this case study highlights the need for a reassessment of how we think about strategy as we try to redesign health care.

We already know that, at a population level, we have predictably poor health outcomes (especially for patients with mental health problems) and that there

An audio interview with Dr. Lee is available at NEJM.org is deeply ingrained dysfunction in our system. We respond reasonably well to

crises, but there is little focus on prevention or the wider determinants of health. All too often, care is fragmented, unplanned, and uncoordinated, regardless of the patient's economic status. And as clinicians, we are painfully aware of increasing demands from patients such as these, the increasing complexity of patients' cases (e.g., those of elderly patients with multiple coexisting conditions), and the fragmentation and poor coordination of the systems around us.

We think the message to be derived from this timeline is that we need to reorganize care around achieving value for patients — and that we have to do it in more thoughtful and strategic ways. If we are really trying to improve health outcomes for patients, we first need to define all the activities that are likely to enhance health for specific segments of the population - that is, to map out what organizational strategists call "value chain analyses." Many of those activities - such as addressing housing and nutritional needs lie outside the traditional health care system. Others - such as prenatal care, teaching parenting skills, and supporting families during the first years of a child's life - represent long-term "investments."

Health care providers obviously cannot take on all those activities, and some that are considered "health care" (e.g., education about prevention) may be done better and more efficiently by others. In such cases, health care organizations might consider diverting some of their resources to other organizations that can perform those activities best. At a minimum, health care providers might work to ensure that those value-enhancing activities occur and that they are coordinated with the provision of traditional clinical care. An example is the integration into clinical settings of personnel who can help address social needs, such as a lack of housing or access to adequate food.

Throughout our careers, we have learned much from our patients, and we think these three patients from one family offer an important lesson for the work that lies ahead. We don't think that lesson is different on our two sides of the Atlantic. We cannot think of health care redesign without thinking of the activities that will influence the social factors that are intertwined with health — and that thus affect health care spending. The approach we're advocating isn't charity; it's strategy. And we believe it's our best hope for ensuring that one or two generations from now, the story line of Muriel, Janine, and Joshua's family is a different one.

The patients' names and other identifying details have been changed in order to protect their privacy.

Disclosure forms provided by the authors are available with the full text of this article at NEJM.org.

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