

Oswajamy jutro:

Mierzenie się z wyzwaniami polskiej starzejącej się populacji

Taming tomorrow:

Meeting the challenges of Poland's aging population

1. Zarządzanie potencjalnym wzrostem wydatków na zdrowie dla starzejącej się populacji

Managing potential increases in spending on health for an aging population

2. Przygotowanie systemu opieki zdrowotnej w celu zapewnienia lepszej opieki pacjentom chorym na raka

Preparing the health system to provide better care for patients with cancer

3. Zwiększenie doświadczenia pacjentów i zaufania w interakcjach z systemem opieki zdrowotnej

Enhancing patient experience and trust in interactions with the health system

1. The Context

Poland is aging. In another three decades, more than half of the country's population will be over 50.7 years old, 10.4 years more than the current median age of 40.3 years. The share of individuals 65 years and older will rise to 33 percent, up from 17 percent today. The most substantial relative change in the share will take place in the oldest-old age group (80+), which will triple. Poland records one death every 1 minute and one birth every 2 minutes, and with fewer children being born every year, the country's population will eventually shrink to 34.4 million by 2050, 4 million lesser than the current level of 38.4 million.

Poland is not alone in this respect: in recent decades, the combination of low fertility and longer life expectancy, among other factors, has led to an increased proportion of older people in all EU member states. Since 2000, fertility rates have slightly increased in several European countries, but they are expected to remain close to, or below, 2.1 children per woman, the rate needed for long-term replacement of the population (Kohler and Ortega 2003). Throughout Europe, mortality among older people has fallen substantially since the 1970s (Christensen et al. 2009), largely as a result of falling mortality from cardiovascular disease (Glei and Meslé 2010), which can be attributed to a combination of improved lifestyles, prevention, and treatment (Laatikainen 2005). Indeed, the fall in mortality among older people is now the main contributor to population aging, though other elements of population dynamics, such as migration and fluctuating birth rates, are also noteworthy in the discussion of aging populations.

In and of itself, the fact that more people in Poland are living longer is a highly desirable state of affairs, since most people would prefer longevity to dying young, especially if they are living longer healthier. However, there are widespread concerns that a rapidly aging population will have significantly higher health care requirements, simply because the demand for ambulatory, inpatient, and chronic care is higher in later years. Another critical issue is long-term care for the very old, which can become very costly as informal family-based care declines. There is, therefore, a real worry that medical and health costs will rise as populations age, which can be especially problematic if health spending is already very high. Indeed, several studies – especially those concentrated in countries of Western Europe and Japan – document the impact of aging on health and health expenditures and confirm the high level of health services utilization in old age, particularly for ambulatory services, medication, hospital admissions, and surgery. The general finding in most assessments is that health expenditure per episode is typically higher for the elderly, though the magnitude will depend crucially on whether longer life spans mean healthy added years or years of illness and dependency.

A critical question in the establishment of the effect of aging on health and long-term care is whether increased life expectancy is associated with increased time in ill health or postponement of functional limitations and disability (Christensen et al. 2009). Typically, this effect is discussed in terms of three possible theories for population aging: (i) compression of morbidity, with people staying healthier for longer and being in poor health for shorter periods (Fries 1983); (ii) expansion of morbidity, with people living longer in poor health (Gruenberg 1977); or (iii) dynamic equilibrium, in which the postponement of death is accompanied by delays in disability, so the relative time in poor health remains the same. The evidence about which of these trends dominates remains conflicting due to differences in measurements or indicators (Robine, Michel,

and Branch 1992; Brønnum-Hansen 2005), differences across countries, and the difficulty in distinguishing between different forms of morbidity and disability (Parker and Thorslund 2007; Bech et al. 2011).

Overall, the frequency of the most severe levels of disability seems to have substantially decreased in Europe, though less severe disability has become more common (Christensen et al. 2009). On average, however, life expectancy in the EU has risen faster in recent years than has healthy life expectancy, and huge variations exist between men and women as well as between countries. In 2010, healthy life expectancy for men ranged from 52.3 years in Slovakia to 71.7 years in Sweden, and for women from 52.1 years in Slovakia to 71.6 years in Malta (European Commission 2013).

Although evidence supporting the three theories for aging populations is mixed, what is clear is that responses to population aging cannot be complacent. More people will be afflicted with disorders that are common in older people, such as cancers, fractured hips, strokes and dementia. For example, in the UK, the number of cases of cancer in people older than 65 years is expected to increase between 2007 and 2030 by 76.2 percent in men and 67.5 percent in women (Mistry et al. 2011). Likewise, the number of people with dementia is projected to double to 14.5 million in the EU between 2010 and 2050 – equivalent to 3.3 percent of the total population and 10.1 percent of the population aged 65 years or older (Mura, Dartigues, and Berr 2010). Apart from a substantial increase in the proportion of people with such disorders, the complexity of health problems will increase. More people will have several comorbidities and chronic diseases and will be taking various drugs that potentially interact (Dubois, McKee, and Nolte 2006; Hillman 1999; Saltman and Figueras 1997). People with multi-morbidities typically have higher risk of mortality, use health care facilities more, and have poorer quality of life than people with a single disease (Van Baal et al. 2011). This high risk of mortality in people with comorbidities makes health care complex, leads to long stays in hospitals, and increases the need for organization of multidisciplinary care for patients both within and outside hospitals (Hubbard et al. 2004).

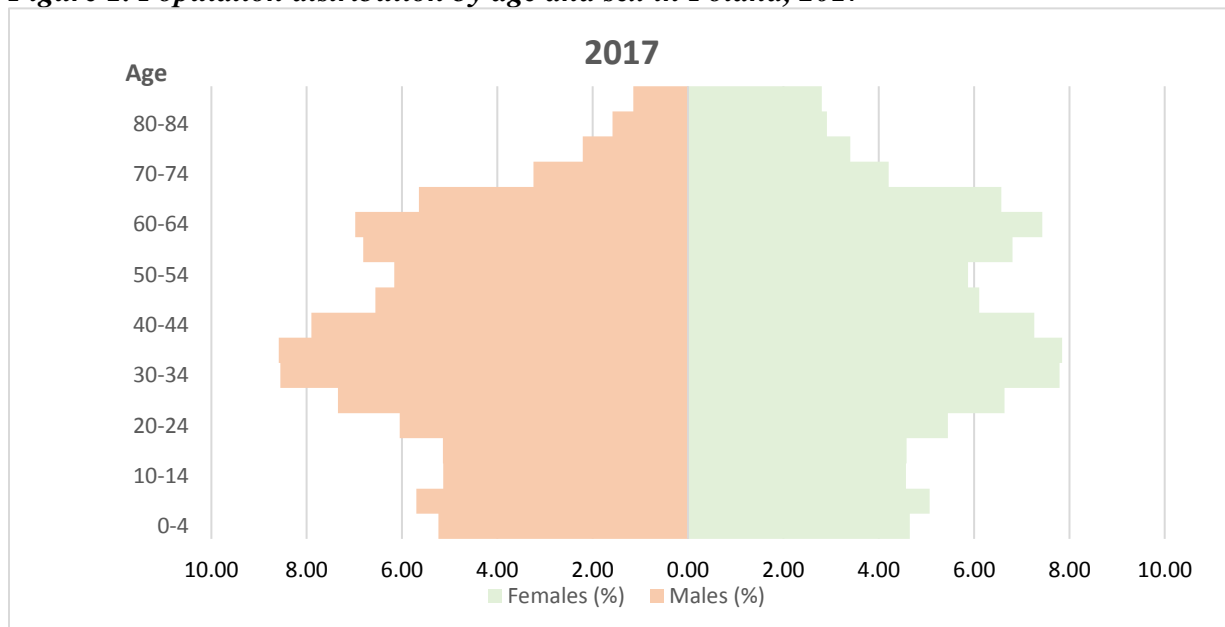
For several reasons, therefore, concerns about the consequences of population aging for health and health systems are becoming increasingly prominent in the social, economic and political agendas in Poland. This policy note describes the rapidly-changing demographics in Poland and discusses the implications for the health sector. The rest of the paper is organized as follows. Section 2 describes the population distribution in Poland and analyses the trends and projections. Section 3 analyzes a unique dataset of the National Health Insurance Fund for 2015 for consumption of healthcare by the elderly in Poland. Section 4 concludes with a discussion of the health sector implications of the changing demographics in Poland.

2. Population Distribution: Trends and Projections

Poland, with a population of 38.4 million, is the eighth-most populous country in the European Union. The median age of the Polish population is 40.3 (2017), 2.5 years less than the average in the European Union (European Commission 2018a). Women constitute 51.6 percent of the total population, outnumbering men by about 1.2 million (GUS 2018, European Commission 2018a).

Figure 1 depicts the distribution of the population by sex and age. Seventeen percent of Poland’s population is 65 years or older (GUS 2018), up from 13.5 percent in 2008 (European Commission 2018a). The old-age dependency ratio, defined as the ratio of the population aged 65 years and over to population between the ages of 15 and 64, is 24.2 (2107), up from 18.9 in 2008. In comparison, the old-age dependency ratio in the EU is 29.9 (European Commission 2018a).

Figure 1. Population distribution by age and sex in Poland, 2017



Source: Staff visualization using GUS 2017 data.

Like other European countries, mortality rates in Poland for men are higher than women in lower age groups, as a result of which the share of 65+ individuals in the total population is much higher in the female population (19.91 percent) compared to men (13.83 percent). In the same vein, 61 percent of the population 65 years and older is women, which translates to 1.3 million more women than men aged 65 and over (GUS 2018). Overall, the median age for men is 38.6 years compared to 42 years for women. These gender differences among the elderly pose a huge burden on older women, especially since pension benefits for women are lower (Błędowski 2017). Access to healthcare by older women, whose health status is typically worse relative to men (Błędowski 2017), is further compromised by the fact that many older women live without any spousal support, which negatively affects their economic status and well-being (Leszko et al 2015).

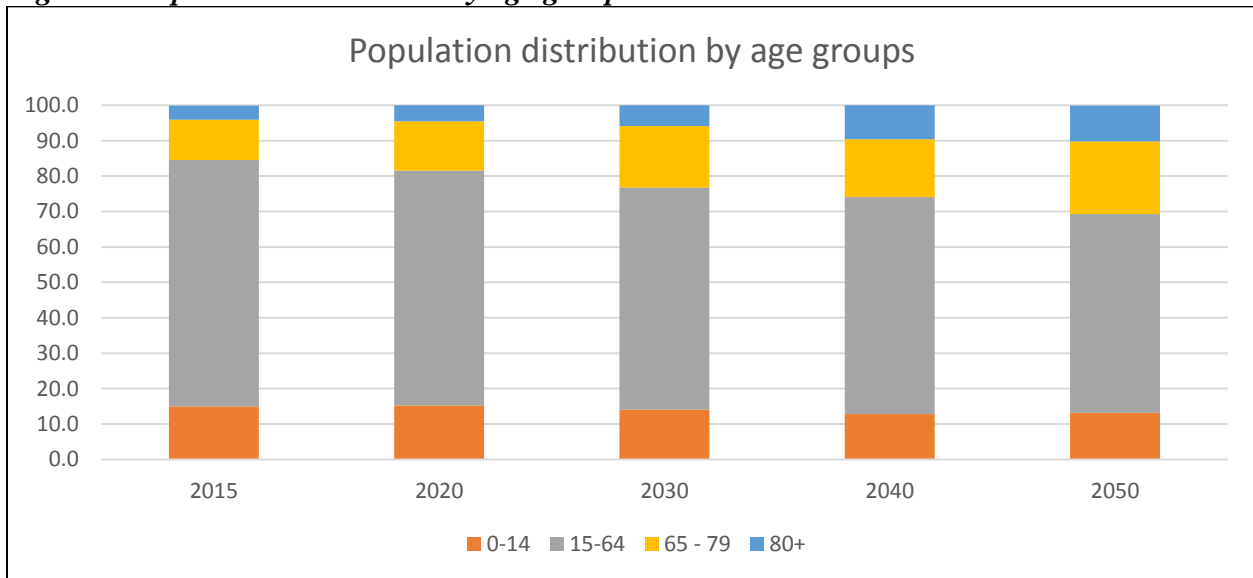
A related issue is the large and increasing share of single-person households of individuals aged 65 years and over and households consisting of retirees and pensioners, posing a further threat to the health sector. In 2012, there were 1.12 million single-person households of individuals over 65 years old, of which 872,100 corresponded to women (European Commission 2018b). Projections suggest that by 2030, more than half of all one-person households will be headed by individuals aged 65 years and over and one every six households will be headed by an individual aged 80 years and over (Błędowski 2017).

Population distribution

Poland has been aging rapidly since 1990s, as a result of which the Polish population is becoming older and less numerous. The total number of inhabitants is expected to fall steadily, to 37.2 in 2030, 35.8 million in 2040 and 34.4 million in 2050 – equivalent to a 10.5 percent decline relative to the current total population of 38.4 million. This trend is projected to continue, and by 2050, the number of deaths will outnumber live births by 174 thousand (European Commission 2019a; European Commission 2019b).

The share of older population (65+) in the total population is also projected to increase in the following decades and is projected to grow from the current 17 percent to 23.3 percent in 2030, 26.4 percent in 2040, and 32.7 percent by 2050. Thus, Poland will have 11 million individuals aged 65 years or more in Poland in 2050, of which more than 1 million will be 80 years or older. The share of individuals between the ages of 15 and 64 years will concurrently decrease in the same period, from 67.9 percent in 2017 to 55.2 percent in 2050 (GUS 2014), and the old-age dependency ratio will rise to 37 in 2030, 42.2 in 2040 and 54.6 in 2050 (European Commission 2019b).

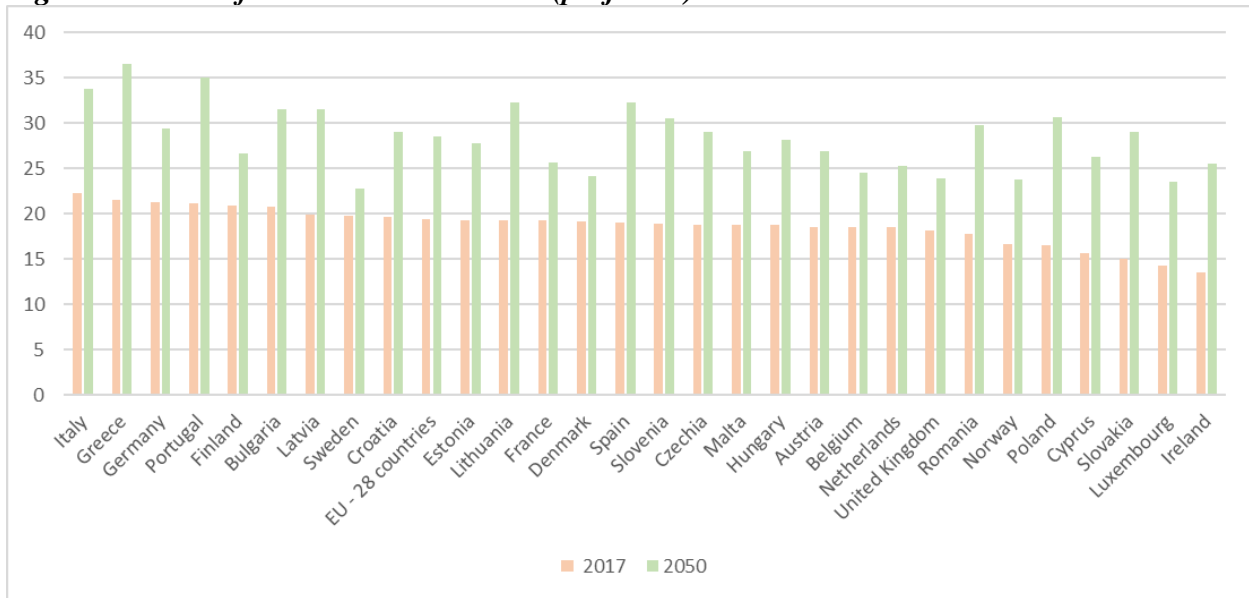
Figure 2. Population distribution by age groups.



Source: Staff visualization using European Commission data, 2019.

To summarize, the total population size will decrease by 10.5 percent by 2050 as a result of a 28 percent decrease in the population between 15 and 64 years and a simultaneous 70 percent increase in the population 65 years or older. Compared to four persons of working-age for every elderly person in 2016, there will be less than 2 by 2050. As Figure 3 shows, Poland will rise from being the 24th oldest EU country in 2017 to becoming the 8th oldest by 2050 (European Commission 2019b).

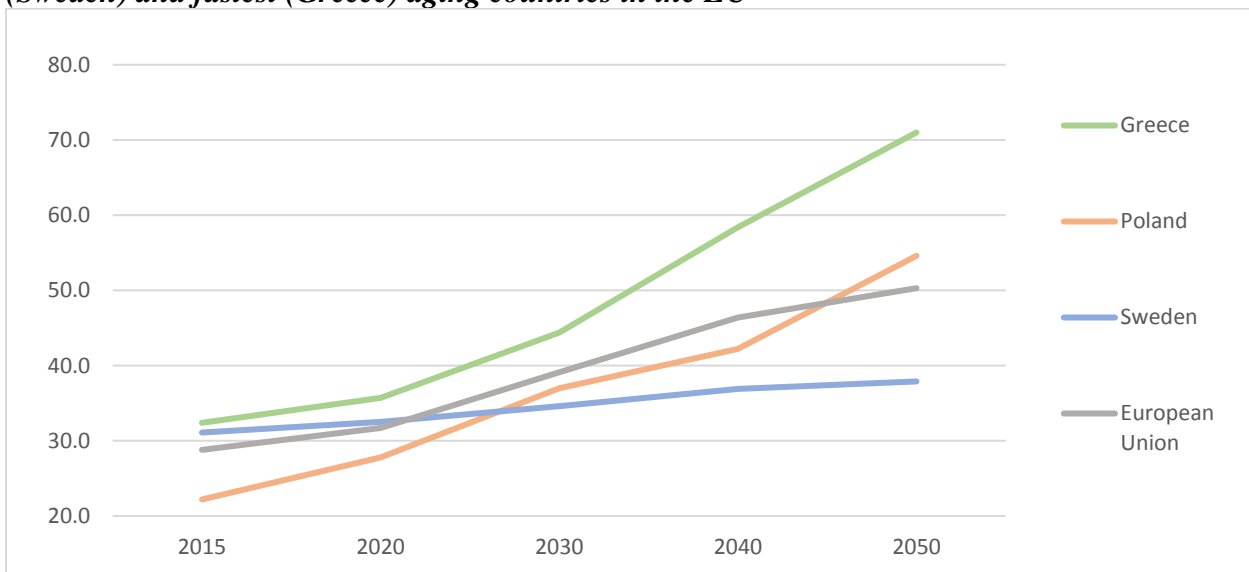
Figure 3. Share of 65+ in 2017 and 2050 (projected) in EU countries



Source: Staff visualization using European Commission data, 2018.

Figure 4 compares Poland with the slowest (Sweden) and the fastest (Greece) aging countries in the European Union. In 2015, the share of 65+ population was almost 9 percentage points lower in Poland relative to Sweden, but by 2050 Poland will surpass Sweden’s share by 17 percentage points. That is, Sweden’s share of 65+ will increase by 6.8 percentage points, but Poland’s will increase by 32.4 percentage points, a value that is much higher than the corresponding average for the European Union, 21.5 percentage points (European Commission 2019b).

Figure 4. Comparison of the share of population 65 and older between Poland and the slowest (Sweden) and fastest (Greece) aging countries in the EU



Source: Staff visualization using European Commission data, 2018.

Factors contributing to population aging in Poland

Various factors underpin the shrinking and rapid aging of the population in Poland. First, the generation of post war baby-boomers born between 1940-1960 is now approaching older ages (World Bank 2015). Second, as in all European countries, the total fertility rate (TFR) in Poland is dipping well below the replacement level that maintains a constant population size (i.e., 2.1 or above), due to factors such as increased female labor market participation, improving women's education, changing lifestyles, diffusion of contraceptives, etc. (for wider discussion on trends in fertility, see: McDonald 2000 and 2002, and European Commission 2010). Poland's fertility rate has remained below 1.5 since 1998, reaching a minimum of 1.22 in 2003, slightly recovering to 1.4 in 2009 and falling again to 1.29 in 2013 (European Commission 2019c, Kotowska and Magda 2017). Since then, the TFR has gradually increased to 1.45 in 2017, and is expected to continue increasing during the following decades. However, TFR values are projected to remain below the maintenance level, climbing at most to 1.61 in 2040 and 1.65 in 2050 (European Commission 2019c).

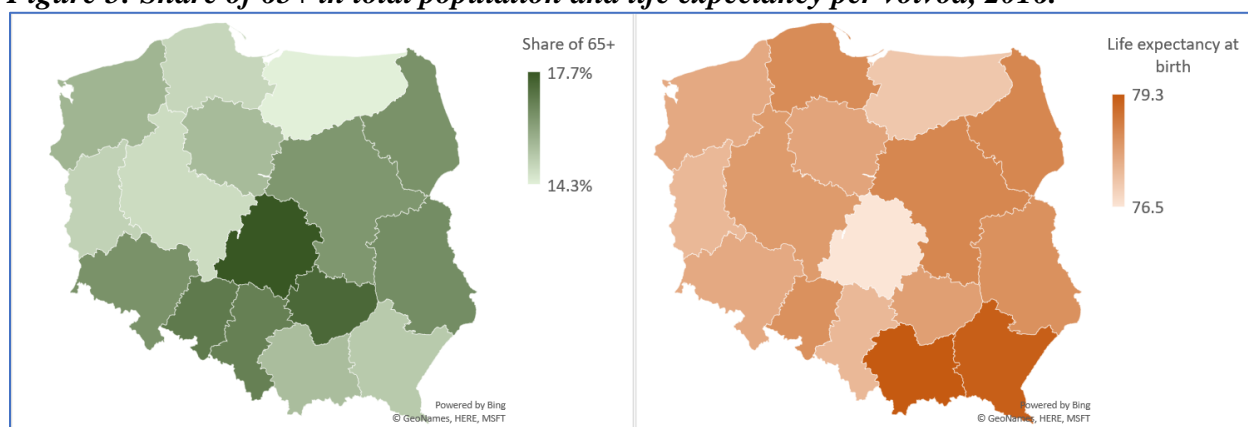
Second, both the average age of women at first child birth and at second child birth have increased, the former from 19.5 years in 2007 to 25 years in 2016 and the latter from 28.4 to 29.4 in the same period. The distribution of births by birth-order has concurrently shifted during the last few years, with the share of first births in total births falling from 51 percent in 2009 to 46 percent in 2016 (European Commission 2019c, Kotowska and Magda 2017). Several family policy changes have been implemented during the last decade to influence this trend in fertility, including reduction in the direct and indirect costs of childcare, extension of the maternity and paternal leave, increased availability of early childcare institutions, and improvements in financial support for families – but the impact of these policy changes on the TFR has not been substantial (Kotowska and Magda 2017).

Regional differences

Life expectancy varies considerably across voivods. In 2016, the average life expectancy in Poland was 78 years, varying from 76.5 years in Łódzkie to 79.3 in Małopolskie. Voivods that register a low life expectancy include Warmińsko-Mazurskie (77.1), Lubuskie (77.4) and Śląskie (77.4). The highest life-expectancy is registered in Małopolskie (79.3 years), followed by Podkarpackie (79.2), Mazowieckie (78.4), and Podlaskie (78.4). The highest life-expectancy for males is observed in Podkarpackie (75.3) and the lowest in Łódzkie (72). Among females, the highest is registered in Podlaskie (83.1), and the lowest in Łódzkie (80.9) (European Commission 2018c). The share of individuals 65 years and older in the total population also varies among voivods, with the lowest share registered in Warmińsko-Mazurskie (15.3 percent) and Wielkopolskie (15.8 percent) and the highest in Łódzkie (18.9 percent) and Świętokrzyskie (19.5 percent) (GUS 2018).

Figure 5 presents a snapshot of these variations, which suggest an interesting association: higher longevity concentrates in voivods such as Małopolskie and Podkarpackie, where individuals live approximately 79.3 and 79.2 years respectively, which have relatively lower share of individuals 65 years and older (16.2 percent and 15.9 percent respectively). On the other hand, many voivods show a relatively high share of individuals 65 years and older but have lower longevity. Łódzkie, for instance, has the highest share of 65+ population but the lowest life expectancy, which is 1.5 years below Poland's average (GUS 2018, European Commission 2018c).

Figure 5: Share of 65+ in total population and life expectancy per voivod, 2016.



Source: Staff visualization using GUS data and European Commission data (2018).

3. Consumption of Healthcare by the Elderly

The data presented in this section is based on the analysis of a rich anonymized service-level dataset provided by the National Health Fund (Narodowy Fundusz Zdrowia, or NFZ). The dataset records millions of episodes covering an array of outpatient specialists, long term and rehabilitation healthcare services received by all citizens across all age-groups in Poland.

Primary health care

All individuals insured by the NFZ, i.e. 98 percent of the population (European Observatory of Health Systems and Policies 2011, OECD/EU 2016), including the elderly, have direct and unlimited access to primary health care. Primary health care services, which include those provided by family doctors or an internist and pediatrician, primary care nurses, midwives and dentists, are financed on the basis of capitation payments, and payments made by the NFZ cover the full range of services provided at the primary care level and are free for all insured individuals with no required copayments (European Observatory of Health Systems and Policies 2011, Windak and Oleszczyk 2015). The main responsibility of providing primary care relies on local governments at the community level (“gminas”), which are responsible for facilitating and warranting equal access to primary care services for all inhabitants (Windak and Oleszczyk 2015). Since primary care providers are paid on capitation basis, not much data is available on the consumption, access and demand of primary care services by different age groups in Poland.

Outpatient specialist care

All individuals contributing to Poland’s social health insurance are entitled to free specialist healthcare if treated by a healthcare provider who has a contract with the NFZ. Specialist outpatient services are provided at therapeutic specialist clinics or specialist dispensaries, and by specialist medical practices. To receive outpatient specialist care, patients usually need a referral from their primary care physician. Financing by the NFZ for specialist services is based on a fee-for-service approach, complemented by capitation payments for patients diagnosed with chronic conditions. Non-negotiable payments are determined centrally at the regional level and are supposed to cover the full costs of treatment. Although the NFZ central office is the institution that has the overall purchasing function and is in charge of drafting contracts with health care

providers, the 16 regional branches of the NFZ are the ones responsible for executing and monitoring the contracts for health care provision, and ultimately for ensuring the availability of services in their territory. Patient registration is made at the regional level at one of the NFZ's regional offices, usually based on place of work (European Observatory on Health Systems and Policies 2011).

The analysis of the 2015 NFZ dataset shows that the 2,479,801 individuals 65 years and older accessed 9,319,616 specialist services in 2015 for a total expenditure of 520,301,792 PLN. On average, therefore, 3.76 services were obtained per patient, for an average cost of 55.83 PLN per service and 209.81 PLN per patient. Consumption of outpatient specialist services is lower and the cost per patient is higher among the 20-64 years old individuals (3.17 services per patient at an average cost per patient of 191.2 PLN) relative to the 65+ group (3.76 services per patient at an average cost per patient of 209.8 PLN). Differences between genders are considerable: 58 percent of the total number of services were accessed by women, although the cost of services is slightly lower for female patients than for male patients (212.7 PLN vs. 207.8 PLN). The most expensive diseases covered in outpatient specialist care are hyperplasia of prostate, osteoarthritis peripheral, primary hypertension, spondylopathies and other dorsopathies, and chronic ischemic heart disease, consuming 56 percent of the total amounts spent in specialist services for the elderly (65+). Table 1 has the details.

Table 1. Use of outpatient specialist care by 65+ population, 2015

Age group	20-64			65+			80+		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Population 2015 ('000)	12,306	12,414	24,720	2,318	3,651	5,969	473	1,071	1,544
Total number of services ('000)	4,659	6,667	11,327	3,918	5,402	9,320	765	1,053	1,819
Total number of patients ('000)	1,458	2,118	3,576	1,040	1,440	2,480	206	305	511
Total value of benefits ('000 PLN)	275,627	408,111	683,739	221,204	299,098	520,302	41,118	54,680	95,799
Number of services per 1,000 population	378.63	537.08	458.20	1,690.33	1,479.64	1,561.46	1,619.70	983.54	1,178.29
Number of services per patient	3.20	3.15	3.17	3.77	3.75	3.76	3.72	3.45	3.56
Number of patients per 1,000 population	118.45	170.65	144.67	448.74	394.36	415.48	435.80	284.97	331.14
Value of benefits per person	22.40	32.87	27.66	95.44	81.93	87.17	87.01	51.05	62.06

Value of benefits per service	59.16	61.21	60.37	56.46	55.37	55.83	53.72	51.90	52.67
Value of benefits per patient	189.09	192.64	191.20	212.68	207.75	209.82	199.66	179.14	187.41

Disparities in the consumption of services across voivods are also considerable. The number of 65+ patients per 65+ population varies 1.4 times between the voivod with the highest share of patients (Śląskie) and the one with the lowest share of patients (Dolnośląskie). Benefits paid by the NFZ per person also vary widely between voivods, with Śląskie spending 70 percent more per person than Świętokrzyskie (107.44 PLN vs 63.34 PLN). Opolskie and Dolnośląskie are two voivods with specifically poor provision and consumption of outpatient specialist healthcare in terms of average number of services per 1,000 population 65 years and older (1,063.04 in Dolnośląskie and 1,194.68 in Opolskie), average number of patients per 1,000 population (326.75 in Dolnośląskie and 361.57 in Opolskie), and the average number of services obtained per patient (3.25 in Dolnośląskie and 3.3 in Opolskie). Table 2 has the details.

Table 2. Use of outpatient specialist care by 65+ population by voivod, 2015

Voivod	65+ population ('000)	Share of 65+ population	Total number of services ('000)	Total number of patients ('000)	Total value of benefits ('000 PLN)	Number of services per 1,000 population	Number of services per patient	Number of patients per 1,000 population	Value of benefits per person	Value of benefits per patient	Value of benefits per service
Dolnośląskie	471	0.16	501	154	30,528	1,063.0	3.25	326.75	64.87	198.52	61.02
Kujawsko-Pomorskie	320	0.15	456	133	23,952	1,426.3	3.43	415.96	74.92	180.11	52.53
Lubelskie	350	0.16	476	124	23,642	1,361.1	3.84	354.06	67.54	190.76	49.62
Lubuskie	150	0.15	205	60	13,282	1,365.8	3.43	398.69	88.34	221.56	64.68
Łódzkie	440	0.18	613	165	31,407	1,392.3	3.70	376.07	71.37	189.78	51.26
Małopolskie	515	0.15	951	229	49,088	1,845.6	4.15	444.27	95.30	214.51	51.64
Mazowieckie	868	0.16	1,326	366	83,013	1,526.8	3.62	422.07	95.62	226.55	62.63
Opolskie	164	0.16	196	59	11,778	1,194.7	3.30	361.57	71.89	198.82	60.17
Podkarpackie	317	0.15	475	118	24,030	1,498.3	4.01	373.82	75.85	202.92	50.63
Podlaskie	191	0.16	323	84	18,224	1,686.8	3.86	436.77	95.29	218.18	56.49
Pomorskie	339	0.15	594	151	31,953	1,752.6	3.94	444.51	94.30	212.15	53.81
Śląskie	762	0.17	1,464	351	81,859	1,922.1	4.17	460.64	107.44	233.25	55.90
Świętokrzyskie	216	0.17	278	78	13,669	1,286.6	3.56	361.72	63.34	175.10	49.23
Warmińsko-Mazurskie	202	0.14	269	76	14,436	1,327.2	3.52	377.35	71.36	189.10	53.76
Wielkopolskie	508	0.15	724	204	44,278	1,424.6	3.54	402.23	87.11	216.58	61.15
Zachodniopomorskie	263	0.15	400	106	23,303	1,517.4	3.76	403.89	88.45	218.99	58.29
Ratio highest to lowest	4.65	1.26	7.48	6.19	7.05	1.81	1.28	1.41	1.70	1.33	1.31

Medical rehabilitation

There is a long tradition around medical rehabilitation services in Poland, which are mainly provided by the health sector and are funded fully or partially by the NFZ. Rehabilitation services can be divided into medical rehabilitation and treatment in health resorts hospitals and sanatoria, both included in the guaranteed health benefits basket and only requiring a valid referral from an NFZ-contracted physician. Treatment in health resorts is usually obtained as a continuation of hospital treatment for a maximum of 28 days inpatient or between 6 and 18 days if rehabilitation takes place in resorts in an ambulatory setting. Patients with less severe conditions are treated in sanatoria.

Table 3. Use of rehabilitation healthcare services by the 65+ population, 2015

Age group	65+			80+			20-64		
Sex	Male	Female	Total	Male	Female	Total	Male	Female	Total
Population ('000)	2,318	3,651	5,969	473	1,071	1,544	12,306	12,414	24,720
Total no. of services ('000)	5,067	14,486	19,553	846	2,250	3,095	11,990	25,177	25,812
Total no. of patients ('000)	220	576	796	37	94	131	1,596	2,435	1,186
Total value of benefits ('000 PLN)	108,097	309,392	417,489	18,794	55,644	74,437	426,619	731,602	457,223
Number of services per 1,000 pop	2,186.2	3,968.0	3,276.1	1,789.3	2,100.4	2,005.2	974.4	2,028.1	1,044.2
Number of services per patient	23	25.16	24.56	22.97	23.96	23.68	7.51	10.34	21.77
Number of patients per 1,000 pop	95.04	157.74	133.39	77.9	87.67	84.68	129.69	196.13	47.96
Value of benefits per person	46.64	84.75	69.95	39.77	51.95	48.22	34.67	58.93	18.5
Value of benefits per service	21.33	21.36	21.35	22.23	24.73	24.05	35.58	29.06	17.71
Value of benefits per patient	490.74	537.28	524.4	510.54	592.52	569.44	267.32	300.48	385.68

The analysis of the 2015 NFZ dataset shows that the 796,121 patients 65 years and older received 19,553,240 rehabilitation services in 2015 for a total value of 417,489,248 PLN. On average, rehabilitation services cost 21.35 PLN per service and 524.40 PLN per patient, and each patient received an average of 24.56 services in 2015. Consumption of rehabilitation services was higher among the population 80 years and older, and cost 569.44 PLN per patient and 24.05 per service. On the other hand, consumption among the 20-64 years old was much lower and cost 385.68 PLN per patient, 17.71 PLN per service, and 21.77 services per patient. Differences

between genders are considerable: 72 percent of all services are received by women, who receive on average 2.2 more services than men. Likewise, total cost was 10 percent higher in women compared to men. The three most costly diseases treated in rehabilitation services were osteoarthritis peripheral, spondylopathies & other dorsopathies, and joint inflammation (arthroplasties). Table 3 has the details.

Disparities in the consumption of services across voivods are also considerable. The average number of rehabilitation services per patient ranged between 36.5 in Podlaskie, the highest consumption voivod, and 11.1 in Opolskie, the lowest consumption voivod. When considering the number of services provided per 1,000 population 65 years and older, the differences are even wider: the highest consumption voivod (Mazowieckie: 5,682.9 services per 1,000 65+ population) consumes on average 3.6 times more services than the lowest consumption voivod (Opolskie: 1,231.3 services per 1,000 65+ population). Benefits paid by NFZ varied from 45.1 PLN per patient in Warmińsko-Mazurskie to 105.8 PLN in Mazowieckie, equivalent to a 3.3 times variation across voivods. Variations in payments per service are even larger, ranging from 12.4 in Podlaskie to 56.4 in Opolskie). Table 4 has the details.

Table 4. Use of rehabilitation healthcare services by the 65+ population by voivod, 2015

Voivod	65+ population	Total number of services	Total number of patients	Total value of the benefits	Number of services per 1,000 population	Number of services per patient	Number of patients per 1,000 population	Value of the benefits per person	Value of the benefits per patient	Value of the benefits per service
Dolnośląskie	471	1,493	58	31,895	3,172.1	25.7	123.6	67.8	548.5	21.4
Kujawsko-Pomorskie	320	1,423	46	17,798	4,451.4	30.8	144.7	55.7	384.7	12.5
Lubelskie	350	1,400	39	21,932	3,999.5	36.3	110.1	62.7	569.2	15.7
Lubuskie	150	608	19	8,230	4,041.8	31.4	128.9	54.7	424.5	13.5
Łódzkie	440	1,579	61	26,690	3,589.3	25.8	139.3	60.7	435.5	16.9
Małopolskie	515	946	72	38,986	1,837.3	13.2	139.6	75.7	542.3	41.2
Mazowieckie	868	4,934	143	91,846	5,682.9	34.5	164.7	105.8	642.2	18.6
Opolskie	164	202	18	11,374	1,231.3	11.1	110.9	69.4	625.8	56.4
Podkarpackie	317	497	42	19,378	1,568.4	11.7	134.1	61.2	456.2	39.0
Podlaskie	191	774	21	9,625	4,047.7	36.5	110.9	50.3	453.7	12.4
Pomorskie	339	655	52	19,506	1,933.9	12.7	152.1	57.6	378.5	29.8
Śląskie	762	992	89	43,777	1,301.8	11.1	117.2	57.5	490.4	44.1
Świętokrzyskie	216	789	25	16,858	3,657.5	31.5	116.0	78.1	673.4	21.4
Warmińsko-Mazurskie	202	688	21	9,115	3,398.8	33.1	102.7	45.1	438.6	13.3
Wielkopolskie	508	1,774	56	33,898	3,490.3	31.8	109.7	66.7	608.2	19.1
Zachodniopomorskie	263	725	29	14,894	2,750.8	25.0	110.3	56.5	512.7	20.6
Ratio highest to lowest	5.8	24.5	7.9	11.2	4.6	3.3	1.6	2.4	1.8	4.5

Long-term and palliative care

Long term care services refer to the organization and delivery of a broad range of services and assistance required by persons with a reduced degree of functional capacity (physical or cognitive) and who are consequently dependent on external assistance with basic activities of daily living over an extended period. These services are designed to minimize, rehabilitate, or compensate for the loss of independent physical or mental functioning and include lower-level care related to assistance with instrumental activities of daily living, such as bathing, dressing, eating, or other personal care, meal preparation and cleaning, life management tasks including shopping, money management, and medication management, and transportation. Health care services such as nursing and rehabilitation represent a crucial component of long-term care systems across countries (Rechel et al 2009, OECD 2011, European Commission 2015, World Bank 2015).

A long tradition of informal care exists in Poland. The family is still identified as the main caregiver for the elderly people (Golinowska 2010), but due to changes in the family model and life-styles, family care is no longer the dominant form of care for dependent people. In response to the growing care needs of the population, formal care organized by the state or private institutions is progressively replacing traditional informal care provision (World Bank 2015). The provision of formal public long-term care is still in initial phases, and services for the elderly depend on the Ministry of Health (for medical/health services) and the Ministry of Labor and Social Policy (for social assistance services). Services provided by the health sector include cases of dependency care requiring various medical services, while the social sector includes care for dependent elderly individuals who may also face a socially complicated situation (for instance, are poor or live alone). There are in addition various types of cash transfers available, targeting different types of beneficiaries: older people, dependent people with motor disabilities, and caregivers of children with various disabilities. In addition, long-term care is provided in Poland by non-governmental organizations and the private sector (World Bank 2015).

The analysis of the 2015 NFZ dataset shows that the 20,226 patients received long-term care medical and health services. Each long-term care service cost on average 545.8 PLN and each patient received on average 18.0 services, for an average cost per patient of 9,837.6 PLN. Women consumed more services than men (18.3 per female patient compared to 17.2 per male patient) and services received by women cost slightly more (549.8 PLN per service for female patient compared to 531.9 PLN per service for male patients). As a result, the cost per patient is slightly higher for women (10,048.43 PLN) relative to men (9,132.3 PLN). Expectedly, the majority of services (66 percent) are obtained by patients 80 years and older, which accounted for 70 percent of all benefits paid by NFZ. Table 5 has the details.

Table 5. Use of long-term healthcare services by the 65+ population, 2015

Age group	20-64			65+			80+		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Population ('000)	12,306	12,414	24,720	2,318	3,651	5,969	473	1,071	1,544
Total number of services ('000)	14	14	28	80	285	365	43	199	243
Total number of patients	808	625	1,433	4,654	15,572	20,226	2,531	11,706	14,237
Total value of the benefits ('000 PLN)	9,859	7,395	17,254	42,502	156,474	198,976	20,325	119,674	139,999
Number of services per 1,000 pop	1.14	1.14	1.14	34.48	77.96	61.08	91.67	186.05	157.16
Number of services per patient	17.35	22.61	19.65	17.17	18.28	18.02	17.12	17.02	17.04
Number of patients per 1,000 pop	0.07	0.05	0.06	2.01	4.27	3.39	5.36	10.93	9.22
Value of the benefits per person	0.8	0.6	0.7	18.34	42.86	33.34	43.01	111.73	90.69
Value of the benefits per service	703.1	523.3	612.9	531.9	549.8	545.8	469.2	600.5	577.1
Value of the benefits per patient ('000 PLN)	12,202	11,832	12,041	9,132	10,048	9,838	8,030	10,223	9,833.4

Disparities in the consumption of services across voivods are also considerable. Although the population 65 years and above varies by up to 5.8 times across voivods, the number of patients who accessed long-term care in 2015 varied up to 20 times, and the total number of services up to 18.7 times across voivods. The value of the benefits paid by NFZ during 2015 also varied by 16.5 times, almost thrice of what would have been justified by disparities in population size. When considering the number of services provided per 1,000 population 65 years and above, the highest consumption voivod (Świętokrzyskie: 224.9 services per 1,000 65+ population) consumed 22 times the number of services of the lowest consumption voivod (Pomorskie: 10.2 services per 1,000 65+ population). The average number of services per patient varied from 6.2 in Łódzkie to 60.7 in Świętokrzyskie, and the average cost per patient from 7,726.1 PLN in Zachodniopomorskie to 13,166.7 PLN in Małopolskie. Table 6 has the details.

Table 6. Use of long-term healthcare services by the 65+ population by voivod, 2015

Voivod	65+ population ('000)	Total number of services	Total number of patients	Total value of the benefits ('000 PLN)	Number of services per 1,000 population	Number of services per patient	Number of patients per 1,000 population	Value of benefits per person	Value of benefits per service	Value of benefits per patient ('000 PLN)
Dolnośląskie	471	15,681	1,842	22,045	33.32	8.51	3.91	46.84	1,405.87	11.97
Kujawsko-Pomorskie	320	9,485	581	5,904	29.67	16.33	1.82	18.47	622.51	10.16
Lubelskie	350	34,526	938	10,345	98.63	36.81	2.68	29.55	299.62	11.03
Lubuskie	150	6,234	332	3,437	41.46	18.78	2.21	22.86	551.41	10.35
Łódzkie	440	7,203	1,161	9,064	16.37	6.2	2.64	20.6	1,258.34	7.81
Małopolskie	515	15,437	2,107	27,742	29.97	7.33	4.09	53.86	1,797.13	13.17
Mazowieckie	868	64,280	2,364	23,678	74.04	27.19	2.72	27.27	368.36	10.02
Opolskie	164	16,306	1,042	8,716	99.53	15.65	6.36	53.2	534.54	8.36
Podkarpackie	317	24,132	1,529	16,081	76.18	15.78	4.83	50.76	666.38	10.52
Podlaskie	191	8,951	624	5,316	46.8	14.34	3.26	27.8	593.94	8.52
Pomorskie	339	3,438	370	3,367	10.15	9.29	1.09	9.94	979.28	9.10
Śląskie	762	54,765	4,553	39,062	71.88	12.03	5.98	51.27	713.26	8.58
Świętokrzyskie	216	48,528	800	6,602	224.85	60.66	3.71	30.59	136.05	8.25
Warmińsko-Mazurskie	202	4,911	226	2,370	24.27	21.73	1.12	11.71	482.59	10.49
Wielkopolskie	508	33,436	959	9,054	65.78	34.87	1.89	17.81	270.78	9.44
Zachodniopomorskie	263	16,802	768	5,934	63.77	21.88	2.92	22.52	353.15	7.73
Ratio highest to lowest	5.77	18.70	20.15	16.48	22.16	9.78	5.82	5.42	13.21	1.7

4. Implications for Poland's Health Care System

The analysis in the previous sections suggests that: (i) there will be more people in the 65 years and above age group by 2050 compared to the present; (ii) people in the age group 65 years and above seek more healthcare compared to people in the age group younger than 65 years; health services for people in the age group 65 years or above cost more per unit compared to health services for younger people; and (iv) although most long-term care for older people is still provided by family members and friends for free, by 2050 the most long-term care will come with a tangible expense to the beneficiary. The question then is: how must Poland's health system and associated public policies respond to the challenges of its aging population?

The good news is that population aging as described above does not translate directly into much higher health expenditure and the common assumption that population aging will drive future health expenditure to unsustainable levels seems unjustified (EIU 2009; Werbow 2007).

Although older people account for a substantial proportion of health care, other factors, especially technological development, have a much larger effect on aggregate health care costs (Dormont 2009; Martins, Maisonneuve, and Bjørnerud 2006). In the EU, projected increases of health expenditure to 2060 are moderate, and account for only an additional 1.5 percent of GDP (European Commission 2009). If increases in life expectancy are accompanied by a similar proportion of life in good health (in line with the dynamic equilibrium hypothesis), health expenditure is projected to increase by only 0.7 percent of GDP (European Commission 2009). Using European Commission data for projected population aging and data from the OECD on per-person health expenditure per age group, Rechel et al (2013) find that the effect of aging on per-person health expenditure is neither negligible nor alarming. In the Netherlands, for example, the isolated effect of aging on health expenditure per person is projected to result in an aging-associated growth of 0.9 percent of mean yearly health expenditure per person.

Further, research suggests that proximity of death is a more important predictor of high acute health care expenditure than is aging (Fuchs 1984; Polder, Barendregt, and van Oers 2006; Breyer and Felder 2006), as a large proportion of expenditure on lifetime acute health care often occurs in the last year of life (Kardamanidis et al. 2007). In the USA, more than 25 percent of total expenditure by Medicare in 1994-99 was for patients in their last year of life (Calfo, Smith, and Zezza 2009). The apparent paradox of greater illness burden yet constrained increases in expenditure may be explained by the fact that increased survival postpones many deaths to older ages, and that the cost of dying is actually lower in the older age groups, likely due to a combination of individuals who live the longest being healthier (McGrail et al. 2000) and ageism in medical practice – i.e., rationing of access to health services for older people. Research in the literature has shown that the use of many types of services peaks at about age 80 years and falls thereafter (Kardamanidis et al. 2007, McGrail et al. 2000, Hartman et al. 2008). We note that some limitations may exist in these surveys, which typically exclude people living in nursing and residential care homes. Furthermore, even when acute medical costs level off somewhat, long-term care costs may continue to increase with age.

Even when per-person expenditure on health remains constant or decreases, the growing proportion of older people presents some challenges to the sustainability of health care systems. However, these challenges are not insurmountable, and societies can take measures to increase the change that additional years of life are spent in good health, improve system efficiency to better cope with the needs of older people, and adopt policies that increase participation of the labor force (Rechel et al. 2013). The solution lies in making health systems become more age friendly, in ways such as improved public health measures, enabling of better self-care, investigation of different ways to organize and provide health services, better integration of services across levels of care, and improved management of hospital admissions and discharges. We discuss these in detail below.

Health promotion and disease prevention

Population-based interventions promoting so-called healthy or active aging may not only increase health life expectancy and postpone much health expenditure, but also may have wider economic benefits, such as incentivizing skill development and increasing the inclination to stay in the labor force (Rechel et al. 2009, Suhrcke et al. 2008). Action will implicate primary prevention, including interventions against smoking, alcohol consumption, obesity, sedentary

lifestyles, poor diets, and efforts to improve living conditions and care (Christensen et al. 2009; Fries 2005; Gandjour 2008; Daviglius et al. 2005; Doyle, McKee, and Sheriff 2012).

Good-quality living environments, which include not only personal homes and institutions but also neighborhoods (Beard and Petitot 2010), are important for healthy aging, particularly when they promote strong social relationships, physical activity and rehabilitation, and healthy diets (Seeman 2000; Holt-Lunstad, Smith, Layton 2010). For example, physical activity might help to lower the risk of dementia, depression, degenerative disease, type 2 diabetes, and hypertension, and limit obesity (Oxley 2009). Midlife (age 45–65 years) and older people are the most inactive portion of the population, (King and King 2010) but not inevitably. A study (Byberg et al. 2009) in Sweden showed that men who did little exercise at age 50 years but then became more active had the same level of mortality after 10 years as those who had been very active throughout life (Byberg et al. 2009). Injuries from falls are another important preventable cause of death and disability in older people (Stevens et al. 2006). Effective preventive measures include screening for environmental risk factors, especially for people with a history of falls, and individual programs of muscle strengthening and balance training (Gillespie et al. 2003).

Interventions to prevent, postpone, and treat heart disease and stroke are crucial, as these diseases are leading causes of mortality and long-term disability and become more common with increasing age (Fries 2005; Moon et al. 2003). To yield maximum benefit, prevention programs for older people should not be based on single disease models, but rather should include the overall range of diseases targeted by preventive interventions (Mangin, Sweeney, and Heath 2007). Further, although many programs for health promotion and disease prevention will be targeted at older people, most would benefit people of all ages, which is supported by cohort studies that increasingly evidence that aging is affected by factors throughout the entire life course (Kuh 2007). A life-course approach to healthy aging could address many intergenerational and contextual factors (Kuh 2012), though evidence is scarce about when in the life course interventions are most successful. Comprehensive and balanced strategies for health promotion and disease prevention and a stronger evidence base for the clinical effectiveness and cost-effectiveness of primary prevention activities in older people are critical public health responses to meet the challenges of aging.

Self-care

A crucial resource for older people, particularly those who manage their life in their own homes, is the ability to self-care, which is closely associated with general living conditions, sense of coherence, perceived health, and nutritional state (Dale, Söderhamn, and Söderhamn 2012). However, older people tend to have lower health literacy than that of younger people, and may therefore, not receive needed health and social services, increasing the risk of adverse health outcomes and costly hospital admissions (Oxley 2009). Increased health literacy and better access to technology, such as computers, the internet, and assistive technologies, may help with the management of chronic disorders and enable patients to engage more effectively in self-care (Oxley 2009, Freedman et al. 2006).

Coordination of care, infrastructure, capacity of health services

Aging populations have an increasing number of chronic disorders and comorbidities, necessitating the cooperation of providers of social and health services to deliver care safely and

efficiently. The management of complex chronic disorders should be improved through a better trained workforce, supportive information systems, and financing mechanisms that encourage integration rather than fragmentation (Oxley 2009, Nolte and McKee 2008). Health-care providers who manage disorders common in older people (including mental health care) should anticipate increasing demand. The workforce providing care for older people should be expanded and health workers should be trained appropriately. Further, the way in which health facilities are built can take account of population aging by being easily accessible and providing a healing environment for patients and a healthy working environment for staff. National standards of care for older people offer a basis to improve care.

Management of hospital admissions and discharges

Social care interventions, such as community-based health-care and social care services for patients discharged from hospitals, can help to reduce the time older people stay in hospitals and limit admissions to institutional long-term care. Reductions in expensive and potentially destabilizing hospital admissions can be achieved through health promotion and disease prevention interventions, such as those targeting nutrition, hygiene, mobility support, and prescription drugs, and regular medical check-ups (Wanless 2006).

Improvement of long-term care

Policy options for improvement of long-term care include supported self-care and home-based services that enable older people to remain in their own homes or a homelike environment. Systems of long-term care can provide support to relatives and enable them to look after older people without jeopardizing their health or economic status. Interventions are needed that help to maintain the basic activities of daily living of older people, allow aging at home, and prevent long-term institutional care (Häkkinen et al. 2008). Appropriate services for older people with chronic disease are essential, and should have a particular focus on care settings, such as home care and day care, and take into account complex disorders. Long-term care, social care, and health care should be integrated at different levels of provision (Coyte, Goodwin, and Laporte 2008).

The unprecedented aging of the population in Poland presents new challenges to health and long-term care. Irrespective of a potential compression of morbidity, the numbers of older people with cancer, fractured hips, strokes, and dementia will increase, and many older people will have multiple morbidities. However, projected increases in health expenditure because of aging are slight and aging does not present a fundamental threat. The key public health response to aging populations is health aging, which will not only mitigate all fears of rising costs but make every additional year of life that much more enjoyable.

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