Imbalances in rural primary care
A scoping literature review with an emphasis on the WHO European Region
Imbalances in rural primary care
A scoping literature review with an emphasis on the WHO European Region
Acknowledgements

This document was produced as part of the technical series on primary health care on the occasion of the Global Conference on Primary Health Care under the overall direction of the Global Conference Coordination Team, led by Ed Kelley (WHO headquarters), Hans Kluge (WHO Regional Office for Europe) and Vidhya Ganesh (UNICEF). Overall technical management for the series was provided by Shannon Barkley (Department of Service Delivery and Safety, WHO headquarters) in collaboration with Pavlos Theodorakis (Department of Health Systems and Public Health, WHO Regional Office for Europe). This document was produced under the overall direction of Pavlos Theodorakis (WHO Regional Office for Europe).

The principal writing team consisted of Mark W.G. Bosmans, Wienke G.W. Boerma and Peter P. Groenewegen of the Netherlands Institute for Health Services Research (Nivel), Utrecht, Netherlands.

We also acknowledge a number of international experts, including Christos Lionis (University of Crete) for his valuable contribution by providing the text for the description of primary care in the Greek islands, as well as other colleagues from Nivel for helpful suggestions and feedback.

Other valuable comments and suggestions were made by WHO staff, in particular, Gabrielle Jacob (WHO Regional Office for Europe), Rania Kawar (WHO headquarters), Briana Rivas Morello (WHO headquarters) and Cris Scotter (WHO Regional Office for Europe).

The views expressed in this document do not necessarily represent the opinions of the individuals mentioned here or their affiliated institutions.
Contents

Introduction ....................................................................................................................... 1

Approach of the literature review .................................................................................... 7

The problem of rural imbalances ........................................................................................ 8
  Economic, social and geographical situation ................................................................. 9
  Health and social problems of the population ............................................................... 10
  Lack of primary care services and staff ....................................................................... 12
  Imbalances in primary care ......................................................................................... 12

Consequences of imbalances in rural primary care ............................................................ 18
  Quality of primary care ............................................................................................... 18
  Accessibility of primary care ......................................................................................... 19

Solutions to imbalances in primary care in rural and remote areas ......................... 21
  Recruiting and retaining more staff in rural areas ....................................................... 21
    Selection .................................................................................................................. 21
    Medical education .................................................................................................... 23
    Coercion .................................................................................................................. 26
    Incentivization .......................................................................................................... 30
    Support ..................................................................................................................... 33
  Shifting tasks to more readily available health care professionals ...... 34
  Mobility solutions ........................................................................................................ 39
  Technological solutions ................................................................................................. 40

Conditions for effective implementation of solutions ..................................................... 42

Conclusions and recommendations .................................................................................... 46
  Geographical coverage ............................................................................................... 46
  Evidence base ............................................................................................................. 47
  Recommendations regarding specific policy options ................................................. 48
  Overarching recommendations ................................................................................... 51

References ....................................................................................................................... 52

Annex 1. Search strategy ................................................................................................. 56
Introduction

Despite a trend of urbanization, almost half (45%) of the world’s population currently lives in rural areas (1). The infrastructure and services are usually less developed in rural and remote areas. These areas tend to suffer from population decline, as young people move towards urban centres for education and employment. This results in ageing rural populations, with increasing health needs and a shrinking carrying capacity for community functions.

In terms of health care, rural populations are disadvantaged; in many cases, health care systems fail to reach rural populations at the same levels as for urban populations (2). Worldwide, access to health care services is lower for people living in rural areas, as shown in Figure 1. In urban areas 22% of the population has no health care coverage, compared to 56% in rural areas.

Figure 1. Global population not covered by legal health coverage: urban–rural comparison

In addition to lower access, evidence points to lower quality of health care services in rural areas, in particular in low- and middle-income countries. The worldwide shortage of health care staff, labelled as the “global health workforce crisis” by the World Health Organization (WHO) and the Organisation for Economic Co-operation and Development (OECD), appears to be much more severe in rural than in urban areas. On several occasions the WHO Regional Office for Europe has addressed the current challenges in human resources for health, including geographical maldistribution, and Member States have been urged to invest in the health workforce (3–5). Estimates published in 2015 by the International Labour Organization (ILO) show that two thirds of the deficit of 10.3 million health care workers in the world is in rural and remote areas (Figure 2), and this deficit is much higher in low-income countries than elsewhere. More recent estimates are even considerably higher (6, 7).
Health care needs in rural areas are largely provided for by generalists working in the community, such as general practitioners, nurses, midwives, therapists and allied health professionals. Together they provide primary care health services that are first contact, accessible, continuous, and comprehensive, and that coordinate care for individuals, families and communities. This is a key process in the health system and a subset of primary health care.

Figure 2. Global estimates of skilled health worker deficits in rural and urban areas, 2015

![Graph showing global health worker deficit: 10.3 million, urban deficit: More than 3 million, rural deficit: About 7 million. Source: ILO estimates, 2015.]

A primary care shortage in rural areas, caused by the combination of increasing demand for care and undersupply of health care services, creates a specific challenge to the attainment of the Sustainable Development Goals (SDGs) and universal health coverage. Ensuring that health care policies “leave no one behind” means that the almost half of the world population currently living in rural areas (1) should obtain essential health services. This requires a focus on increasing availability of, and geographical and financial access to, health services in rural areas.

The unequal distribution of primary care services is a universal problem and is not only restricted to large countries with low population densities. Distance is relative to what people are accustomed to, and hence the problem is also manifest in smaller and more densely populated countries. There are no easy solutions to the imbalances in primary care. However, given the fact that so many countries, large and small, with both low and high population densities, recognize the challenge of providing accessible and good-quality primary care (8), there are opportunities for cross-national learning. To move forward, insight is needed into the current extent of the problem, its root causes, and the consequences of unequal distribution of primary care, and what policy options are available to combat the problem.
In this report, primary care and service delivery are understood as part of the wider context of primary health care. The report focuses on rural and remote areas, although it is important to recognize that imbalances also exist in health and health care in urban areas, particularly in low- and middle-income countries, where deprived populations have no access to highly specialized and often-private health care facilities, due to high user access fees. The scoping review of the literature, which is the basis of this report, focused on the WHO European Region but also took into account review studies from other regions.

The main aim of this report is to provide information from published research on best practices or solutions to counter the risk of imbalances in primary care in rural and remote areas. The approach of our scoping literature review, including the analytical framework, is described in Chapter 2. Chapter 3 provides a description of the problem of primary care provision in rural and remote areas. Chapter 4 subsequently addresses the consequences of imbalances in primary care in rural and remote areas for accessibility and quality of care. Chapter 5 is a review of the research on best practices and solutions. In Chapter 6, we end with conclusions and a summary of policy recommendations based on scoping review findings. Throughout the text examples are added in text boxes. Based on this report, a brief has been published separately by WHO.
Approach of the literature review

We have conducted a scoping review of the literature on primary care in rural areas. This scoping review makes an inventory of evidence from research of the past 10 years, encompassing the years since the landmark *World health report 2008 – Primary health care: now more than ever* (9). A scoping review provides a comprehensive examination of the available literature in order to identify pertinent themes within a given field as opposed to assessing research literature within a narrowly defined protocol (10). Where available in review studies, we could take the methodological quality of studies into account. However, we have not made a methodological assessment of individual studies ourselves.

The main goal of this scoping review is to provide a summary of “best practices” and approaches to solve imbalances in rural primary care. Moreover, the review will offer a situation description of the problems of access to primary care in rural areas and describe what is known about its root causes and consequences. To guide the development of search terms and inclusion and exclusion criteria, we developed an analytical framework that was further refined during the review (Figure 3). In this scoping review, review studies and metaanalyses were prioritized. When investigating examples of policies aimed at addressing inequalities in access to primary care, the focus is on countries within the WHO European Region. A more extensive description of our approach can be found in Annex 1.

Figure 3. Analytical framework

![Analytical framework diagram](image-url)
The problem of rural imbalances

The core of the problem is the existence of and increase in imbalances in primary care in rural and remote areas. Primary care services and staff are relatively scarce in these areas, while at the same time the needs of the population are increasing because of demographic changes, rapid global urbanization and depopulation of rural areas (11). Both have a common root cause in changing economic, social and geographical circumstances.
Economic, social and geographical situation

Rurality can be objectively defined in terms of population density and land utilization or subjectively by self-classification (for example, in surveys) (12). Definitions of rurality may differ between countries, because of the context dependency of what is seen as rural. Adding to rurality is the remoteness of areas from major population centres.

- **Economic situation.** The structure of labour markets in Western countries has changed from a labour market that was predominantly dependent on agriculture and industry towards a more service-oriented economy. The service economy is concentrated in urban areas. Agriculture has witnessed an increase in scale and mechanization, with much lower employment as a consequence.

- **Social situation.** Many public and commercial services have left rural areas, partly because of shrinking populations and partly because of competition from services in the larger population centres in rural areas and outside. People who are able to travel to population centres (for example, to find greater choice and lower prices) have unintentionally undermined the prospects for local services in smaller settlements and towns.

- **Geographical situation.** These economic and social developments have differential geographical impacts in a country. Distance and infrastructure exacerbate the negative effects of economic and social developments in the more remote peripheral regions. The combination of economic and social changes has consequences both for the health and social situation of the population and for the attractiveness of these regions for health care providers.
Health and social problems of the population

Shrinking population numbers lead to an older population in rural and remote areas, to which the lack of employment and services adds social problems of participation. An older population is characterized by multiple, often chronic, health problems, combined with social problems such as isolation. This combination makes their health problems more complex, requiring a population- and person-centred approach. Some of the literature shows that multimorbidity is increasing in both rural and urban areas (9, 13). However, the number of elderly people is greater in rural and remote areas; consequently, the severity of multimorbidity and associated health problems is greater in those areas, as the population is generally in poorer health than in urban areas (14, 15).

The composition of the population in rural and remote areas – with higher proportions of elderly and socioeconomically disadvantaged citizens – may disadvantage health care provision by increasing (complex) demand for health care.

Lack of primary care services and staff

There are worldwide shortages in health care staff, prompting WHO and OECD to warn of a “global health workforce crisis”. More specifically, the share of generalists among physicians is falling in most countries (16, 17), putting greater pressure on primary care. However, there is a specific geographical element to this, namely the unequal distribution of health care staff between rural and urban areas (8, 18, 19). In many rural and remote areas, there is a shortage of health care personnel. Again, shortages in health care workers are not restricted to these areas, but they are usually much more marked. In many countries around the world, there are fewer health care professionals working in rural areas than in non-rural areas (20). This makes it particularly difficult for people in rural areas to access health services and be healthy. As a result, the shortage of primary care physicians in rural areas constitutes a profound health policy issue worldwide (19, 21).

Recruitment of health care staff to rural and remote areas, and retention of staff who work there, are problems faced by many countries (22). At the root of this unequal distribution lies the fact that generally physicians are less willing to work in rural areas than in urban areas (19). There are several reasons for this, such as higher workload (12, 23), lower income (12), fewer job opportunities for spouses and educational opportunities for children (24, 25), and professional and social isolation (26–28). The most important predictors for practising in rural areas are rural background, rural exposure during medical education, and attention to rural practice during specialist training (24, 29, 30).

Retention is a problem in itself, as findings from some studies suggest that retention periods among rural physicians are relatively short (23, 31, 32). Main stressors for rural health workers are workload, work-life balance, and both social and professional isolation. Conversely, the main factors positively influencing retention are job satisfaction, career satisfaction and family-life satisfaction (16, 23, 27, 30, 32).

In addition to staffing problems in rural areas, the degree of access to primary care services may also be partly the result of issues related to the economic viability of providing certain services in these areas. In rural areas, population density can be so low that it is economically unsustainable to provide effective care facilities (19, 33).
Imbalances in primary care

As is clear from the landmark World health report 2008 (9), many countries are far from reaching universal health coverage and equal access to health care. Among the groups with little or no access to high-quality primary care are people living in rural and remote areas. This primary care imbalance is apparent from international data comparing health care provision in urban and rural areas. Figures from 2015 and 2017 show that the physician density (number of physicians per 1000 inhabitants) in all countries – including countries in the European Region – is consistently lower in rural areas than in urban areas (17, 19, 34). For primary care physicians specifically, it is evident that in many countries their share relative to total physician numbers is in steady decline (17). This might signify a growing shortage of primary care physicians, which will be most manifest in rural areas. Even though globally the share of the population living in rural areas is declining, the rural population still comprises 45.3% of the world population (1). Coupled with the fact that ILO estimates show that only 23% of health workers in the world today are deployed in rural areas (18), this means that almost half the world population has to make do with fewer health care resources than their urban counterparts.
Box 1 presents an example from the Netherlands of problems related to rural primary care and associated policies.

**Box 1. Rural primary care in the Netherlands**

**Problem and context**
The Netherlands is a small country with one of the highest population densities in the European Region (507 inhabitants per square kilometre). Because of the relatively small distances, access issues in rural areas are mild compared to those in other countries. However, differences in population density are large, ranging from more than 6000 per square kilometre in some urban municipalities to less than 100 in the most rural municipalities. The Netherlands has several areas with an expected population decline of more than 4% by 2040, which is in clear contrast to an expected increase of 11% in the rest of the country. Because younger generations leave in search of work and education, the population of these areas is rapidly ageing, with consequent effects on the socioeconomic status of those remaining. This means that there is an increasing demand for health care relative to the population size.

This problem specifically occurs in the provision of primary care. In the Netherlands, the primary care physicians are general practitioners (GPs), who act as gatekeepers to the health care system. GPs mostly work as independent entrepreneurs running their own practices. In depopulating areas, GPs increasingly experience problems finding replacements upon retirement or during holidays. Their practices become less attractive for young GPs as the new generations want to work in group practices, with fewer working hours and on a more salaried base. While previously solo practices run by male GPs who were self-employed and worked full time were the norm, currently the majority of GPs are female, preferring shorter working hours and a salaried status. They also tend to take the job options of their partners into account when choosing their work location (35).

**Policies**
Since 1999, the Dutch Government has implemented a system of health workforce planning and forecasting. This system ensures a sufficient supply of physicians, including GPs, by monitoring the future need for GPs, and adapting the training inflow accordingly every three years. As a result, on a national level, shortage and oversupply have been largely prevented. The situation in depopulating areas was only recently put on the national policy agenda. On a regional level, health care employers’ organizations have developed regional action plans to combat personnel shortages in health care. These focus mainly on education and working conditions. The national coordination of the GP training institutes initiated a new allocation system to ensure an equal allocation of GPs in training over the country, and extra training locations were created near some depopulating areas.

**Evidence for effectiveness of policies**
As the regional action plans were only developed in 2017, the evidence so far is limited. No evaluation of the effectiveness of (local) policies has yet been conducted.

Source: Batenburg et al. (35).

Geographically unequal distribution and the mismatch between health care professionals and health care demand have been part of health policy discussion for decades. Despite this, the problem continues to exist, and is a policy priority for many countries. As is clear from the OECD report *Health workforce policies in OECD countries: right jobs, right skills, right places* (17), rural regions and socioeconomically disadvantaged urban areas are generally less well staffed by doctors than other regions. The number of physicians per capita is consistently lower in rural areas. However, there is substantial variation between countries, with very large differences in physician density between rural and urban areas in such countries as Czechia, Greece and the Slovak Republic, and smaller differences in the Netherlands, Turkey and the United Kingdom.

In large countries, such as Australian and the United States of America, coverage problems are especially severe, with larger distances involved and larger areas with low population densities. In such countries, a substantial portion of the population lives in underserved areas. Nevertheless, even in smaller countries, there are peripheral regions that are underserved. Even with shorter distances, travel times may be long due to poor infrastructure, creating particular difficulties for those who are in urgent need of medical care or less mobile, such as the elderly.
Box 2 presents another example, from Belarus, of rural primary care challenges and related policies.

**Box 2. Rural primary care in Belarus**

**Problem**
With an average of 47 inhabitants per square kilometre, Belarus is a sparsely populated country. When it became independent after the break-up of the Soviet Union in 1991, the country inherited an obsolete and inefficient health care system, unable to respond to the population’s health needs. The system was State run and heavily relied on specialist and hospital services, with a minor role for primary care. Supply of health care workers was excessive but unevenly distributed, resulting in poorer access to health care in rural settings.

**Policies**
Unlike some other former communist countries, Belarus opted for incremental change with small steps, while preserving old structures as much as possible. A major change in health care was the restructuring of primary care in rural areas, in which specially trained GPs would replace physicians that used to be strongly involved in laborious bureaucratic tasks, sickness certification and routine medical check-ups. The new system would place greater emphasis on diagnostics, disease management and other curative tasks. Furthermore, a salary system was introduced, taking into account the actual population the physician was responsible for, rather than the official norm. As shortage of staff was most prevalent in rural practice, physicians there worked for much larger populations than the norm. It should be noted, however, that this restructured GP model was only intended for rural areas, while the traditional specialist-centred model was retained for cities and towns.

Besides this health policy initiative, primary care benefited from a more general State programme to revitalize rural areas. Measures to improve health care facilities of the rural population included the refurbishment of practice premises and the guarantee that practices would have running water at their disposal.

**Evidence**
The GP model has been introduced in a few pilot regions, but as a result of half-hearted policy implementation the dominant mode of primary care continues to follow the old system. The training capacity for new GPs is insufficient to fully roll out the new model. The status of GPs is still low, and their workload continues to be high due to staff shortages. A number of the doctors who had been retrained as GPs eventually decided to become specialists rather than engaging in primary care, where it was hard to practise what they had learned. (Re-)training of district doctors as GPs has proven to work in other countries in Eastern Europe (in particular the Baltic countries).

*Source:* Boerma et al. (36).

The problem of imbalances in primary care is reinforced by a possible feedback loop. The lack of primary care services in relation to the health and social problems of the population might lead to undersupply of preventive, curative, rehabilitative and social care. This in turn can reduce population health in the longer run, creating an even greater demand for health care and, as a result, a greater degree of service undercapacity.
Consequences of imbalances in rural primary care

Quality of primary care

The quality of primary care in rural areas is lower than in urban areas in a number of countries, due to a lack of up-to-date equipment, shortages of qualified staff, and a lack of specialized and hospital care to serve as back-up for primary care within a reasonable distance in rural settings. This means that even though the rural population may be able to access health care, the care they receive will not be of the same quality as that offered to urban populations, leading to health disparities. It may also be more difficult to provide integrated care (including preventive care and social care), to assure continuity of care, and to provide specific services, such as end-of-life care (37).

Based on available research, this quality issue is in particular a problem in low- and middle-income countries (38–40), and as such may be very relevant to some of the countries in Central and Eastern Europe and Central Asia that are in the European Region of WHO (see also Box 2 and Box 5).
Accessibility of primary care

Accessibility of health care includes the following dimensions: availability, geography, affordability, accommodation, timeliness, acceptability and awareness (41). The fact that generally access to primary care is poorer in rural areas than in urban areas is in part due to availability: certain health care services or facilities may simply not be available in some regions, or may not be available in sufficient volume to meet the needs of the population. The geographical element also impacts access because unequal and insufficient distribution of health care personnel across rural areas can lead to long travel times for patients. Furthermore, geographical barriers may impede access for individuals who lack personal mobility or transport options to travel to service providers. Affordability of care is also affected: because of greater distances and longer waiting times, the costs associated with accessing services from a rural area will be greater, in terms of time, travel expenditure, and impact on family and caregivers (42). Accommodation refers to the way in which primary care resources are organized. This dimension comprises the organizational factors that must be navigated by patients as well as organizational obstacles (such as fitting in appointments around work, family and social commitments). This is compounded by availability (which may cause longer waiting times) and distance. The timeliness dimension refers to the extent to which health care is available within a time frame optimal to patient health. Acceptability is the extent to which health care services are tailored to meet the sociocultural needs and preferences of patients. This may include the acceptability of remote technological health care delivery methods instead of face-to-face medical consultations. This dimension is most salient where there are large disparities between the beliefs and attitudes of health care providers and patients. Awareness of available health care services may also impact accessibility, as people in rural and remote areas may lack knowledge about their health or may be unaware of the health services that are available. This element is probably less relevant in most countries within the European Region, as the overwhelming majority of the population is literate and has Internet access (43, 44).
Solutions to imbalances in primary care in rural and remote areas

The solutions aimed at solving imbalances in primary care can be classified into four main strategies: recruiting and retaining more staff in rural areas; shifting tasks to more readily available functions; making health care workers or patients more mobile; and technological innovations in information and communication.

Recruiting and retaining more staff in rural areas

The most obvious solution to the shortage of primary care professionals in rural areas is simply to increase the number of primary care physicians in those areas. This is the most widely implemented type of solution, which comprises two elements: recruiting more health care workers to rural and remote regions; and ensuring that, once recruited, they keep working in rural areas. Various strategies have been used to recruit and retain the rural health workforce, including in the areas of selection, medical education, coercion, incentivization, and support.

Selection

The most common predictors of the choice for rural primary care practice are rural upbringing, rural (high school or medical) education, or some other rural background (23, 24, 29, 30). Based on this widely found association, a good strategy to increase supply of primary care physicians in rural areas therefore is to focus recruitment on students with a rural background, and to stimulate them to choose a primary care specialty. Another strategy is to locate medical schools or training facilities in a rural location.

Even though rural background is a well known predictor of rural practice, there are few examples in the literature of schools or universities actively selecting students with a rural background. A second strategy is establishing a medical school in a rural and remote area, such as Tromsø University in Norway. A longitudinal study of practice careers of graduates of this school over a 33-year period (45) found that over half of Tromsø graduates still practised in the rural region where the school is located, with a large share of the graduates practising there for a longer period.

Selection based on characteristics associated with rural practice as a recruitment strategy (geographical origin, gender, career intent) may be a potentially feasible strategy in all countries. However, it is important to note that focusing on selection of students with a rural background alone is not enough to address physician shortages in rural areas; even though rural background is a strong predictor of rural practice, the overwhelming majority of rural physicians do not have a rural background (23). Furthermore, as in some countries the rural population is rapidly ageing, simply recruiting rural students to choose a medical career is not sufficient, as the influx of medical students with a rural background will also probably decrease.

It is important to note that the reviews and interventions based on rural background are strongly focused on physicians. There is no evidence of the effectiveness of selection on recruitment of other types of health care workers, such as nurses. To summarize, there is strong evidence for the effect of rural background on rural practice; however, this recruitment strategy by itself will not be enough to negate the shortage of primary care workers in rural and remote areas.
Medical education

A commonly used mechanism to stimulate medical students to choose to practise in rural areas is to stimulate them by some kind of rural exposure, such as rural placement during their training (46), or including rural medicine in the standard curriculum of physicians. Rural exposure schemes can vary widely in scope and duration, from a single day (47) to a year or more. Most of these interventions consist of internships or placements during training as a physician (undergraduate), or training as a primary care physician (postgraduate). The first focuses on early exposure, and is based on the premise that it might help stimulate the choice for rural primary care practice before strong preferences have formed on medical specialization (16). The second offers extensive rural exposure to physicians who have already chosen to become primary care physicians, and is intended to give extensive hands-on experience in primary care practice in a rural setting. This is based on the premise that when doctors know what to expect in rural practice, and are better equipped with the necessary skills, they are more likely to continue to practise rurally than unprepared doctors practising in a rural setting (48).

As identified by the systematic review of Crampton, McLachlan and Illing (46), most studies investigating the effect of rural placements are from countries with large rural areas and relatively low population densities, such as Australia, Canada and the United States. Although smaller countries with higher rural population densities also experience problems in rural access to primary care and have also conducted studies, relatively few examples of undergraduate programmes aimed at rural exposure were found in the European Region. One is the “rural day” offered to primary care physician trainees consisting of information sessions, a visit to a rural primary care centre, and informal interaction with local stakeholders. Although results showed a positive attitude change of students towards rural practice, there was no significant difference in their intention to work in a rural area before and after the intervention (47). An example of a postgraduate programme from within the European Region is the primary care physician rural fellowship programme in Scotland. In this programme, newly qualified GPs are offered an additional year of training in rural medicine. Within this year of training, they are expected to spend roughly a quarter of their year within a primary care practice located in a rural area and follow additional courses. They are offered support and peer groups are organized. Results of this programme are promising, with approximately three out of four graduates retained within rural practice (49). It should be noted that those choosing a rural fellowship already comprise a selection with a positive attitude towards rural practice.
The effectiveness of both interventions (rural exposure and including rural medicine within the standard curriculum) has been widely examined, with varying results (24, 46, 48, 50–52). The effects of rural exposure schemes vary across studies, from no effect on the intentions to practise in rural areas (47) to a fourfold increase in the odds of practising in rural or otherwise underserved areas (51). Furthermore, as most of these interventions are voluntary, the real impact of these programmes is hard to quantify. Their voluntary nature means that trainees self-select for rural exposure. It is reasonable to assume that they have at least some interest in rural practice before choosing to participate, thereby putting into question the added effect of rural exposure. Some of the coercive strategies mentioned in the next section are non-elective placements. Examining the effect of such a system may give a more realistic assessment of the effectiveness of rural exposure.

Although evidence of overall effectiveness is limited, some guidelines for including rural exposure policies aimed at rural health care worker shortages can be offered. In a review of all OECD countries, Marchand and Peckham (16) examined the effectiveness of recruitment and retention strategies. They found that it is important to expose students to primary care practice in an early stage of their education, before specialty preferences are set. Viscomi and Larkins (48) additionally recommend that training programmes should be better structured to attract candidates who are more likely to enter rural practice (for instance by integrating rural exposure throughout the curriculum); and that more efforts be made at various points in the “making” of a primary care physician, starting with generating interest in pursuing a medical career among secondary school students. Furthermore, the reviews stress that in order to determine the effectiveness of rural exposure, more longitudinal studies are needed that correct for confounding factors. In addition to influencing practice location, rural exposure programmes do have a more general benefit that supports their use regardless of the effect on location: studies show that students report a significant improvement in their clinical skills after rural exposure (50). Furthermore, it helps students pre-inclined to practise rurally to prepare for their working lives, and increases their confidence in being able to perform well in rural practice (23, 46, 50).
Coercion

Coercive strategies aimed at addressing the shortage of physicians in rural areas remove the element of free will and impose regulations or conditions upon (graduating) physicians to practise for a certain period of time in rural areas. These strategies can focus on internships or placement during education, on practice location of early career physicians, or on assignment of (permanent) practice location.

An example of a non-voluntary placement system is in Norway, where individual medical students are randomly assigned a number in a lottery. Those numbered first in the sequence are allowed to choose from any placement location for their mandatory primary care internship, while those with latter numbers choose from the remaining options. Although theoretically the students who draw the first numbers may also choose rural placement, usually the most remote counties are chosen last (21). Initial results of the programme were minimal, with most doctors returning to urban areas as soon as they were fully licensed. Therefore, tutorials within peer groups were organized with the goal of providing the opportunity to share their experiences and to help combat their professional and social isolation. After this addition to the programme, a higher percentage of interns with a non-rural background than was expected from their background took their first job as a fully licensed physician in a rural area (21). However, the probability of rural practice was affected more strongly by rural origin and location of the university.

A large number of countries have already implemented compulsory programmes (53). Worldwide, 70 countries have implemented them in some form. There is little scientific evidence, however, that compulsory service programmes aimed at recruiting health care workers to rural areas stimulate health care workers to continue to work in rural areas (29, 53). In fact, they may even have an adverse effect in the long term, driving away junior doctors from future rural practice.
Box 3 presents an example from the Greek islands of policies used to address the problem of providing health care services in less accessible locations, and considers the effectiveness of those policies.

**Box 3. Primary health care in the Greek islands**

**Problem and context**

Greece includes 6000 islands and islets scattered in the Aegean and Ionian Seas, of which only 227 islands are inhabited. The remoteness and the geographical isolation of the island communities introduce certain challenges in term of access to health care services (54). There are two distinct problems that make this context more complex than the mainland: the influx of refugees and the austerity crisis. Thousands of refugees continue to arrive by sea (2400 in June 2018), according to the United Nations High Commissioner for Refugees. A report from the island of Crete states that rural health care services are attempting to manage increasing numbers of patients who are now seeking public rather than private health care services and are no longer seeking preventive services due to the austerity crisis. Mental health disorders, alcohol overuse and domestic violence seem to be common problems in rural primary care services. However, the key problem that rural primary care is still facing is the shortage of medical and nursing personnel and equipment (55).

**Description of policies used to address rural problems**

A national primary care plan is in its early phases of implementation in Greece. As part of this reform, decentralized local primary health care units with multidisciplinary teams have been introduced across the country, primarily to serve the need for primary health care services in urban areas. It is anticipated that team-based approaches and gatekeeping roles will be undertaken by these primary health care units. The development of academic primary care units has been included among the new policies to support continuous professional development in Greek regions. However, there is still a lack of specific policy-related actions that will address the key problems of the island communities, namely access to primary care and continuity of care. Rural training and research are weak points in the Greek system and this too may have an impact on the limited interest of young physicians in working in remote and island areas. One national successful example of research in rural Greece is the Cretan Practice-based Research Network, which consists of 18 general practitioners working in primary health care settings on the island of Crete. The network operates in collaboration with the School of Medicine at the University of Crete.

**Degree of evidence for the effectiveness of policies**

The current experience gained from the Cretan Practice-based Research Network and the School of Medicine at the University of Crete is anticipated to have an impact on the development of the Academic Primary Health Care Unit in inner Heraklion, Crete. This unit will promote joint actions between the School of Medicine and the School of Health Sciences on the island of Crete with the aim of developing multidisciplinary training modules for rural practitioners and contributing to the development of quality standards for effective primary health care in rural and island areas.

Sources: Economou (54), Lionis and Tatsion (55).

Although coercive strategies do not offer a permanent solution to workforce issues in rural and remote areas, they do add to the available workforce at least during the compulsory period. As such, they can be a viable policy option to help combat acute shortages.

Recommendations when using compulsory service requirements include transparency and clarity (ensuring clear understanding of the rationale and requirements for any compulsory service programme) and support (offering sufficient pay, adequate housing, continuing education, clinical backup and supervision) (8, 53)
**Incentivization**

Incentives to stimulate health care workers to practise in rural areas can consist of bursaries or scholarships, student loan relief, a one-off payment, or a fixed stipend or bonus. They are either conditional upon a certain minimum service duration or, in the case of the last two, a fixed heightened remuneration that comes with rural practice.

In a discrete choice experiment conducted among Norwegian young doctors, preferences regarding key job characteristics were examined using policy simulations (56). Results indicated that to have a real impact on the decision to practise in rural areas, different kinds of incentives should be combined. Furthermore, the study found that increased income had less impact than improvements in non-pecuniary practice attributes, such as the number of primary care physicians in the practice.

An often-made observation in overviews of the effectiveness of financial incentives is that although they are widely implemented, there are hardly any well designed evaluations of their impact (8, 19). Perhaps because of the paucity of reliable studies, there is little agreement on the effectiveness of incentives as a means of addressing the health workforce shortages in rural areas. A number of reviews found mixed evidence for the effectiveness of financial incentives (20, 29, 30, 57), while others found no effect (22, 58). Generally, the evidence for the effectiveness of various incentive schemes is considered to be poor, with individual study quality too poor to draw firm conclusions (20, 30).

With inconclusive evidence of their effect, incentives are not recommended as the policy option with the highest priority. A common finding and recommendation is that for financial incentives to have any real impact, they need to be implemented in combination with other measures (8, 22, 29), and as such, incentives may supplement different policy responses. In addition to combining financial and other incentives with other measures, the incentives should be sufficient to compensate the opportunity costs related to rural practice (8).
Support

The final type of strategy aims at compensating some of the negative elements of rural practice, and as such is more of a retention strategy than a recruitment strategy. As described before, one of the reasons health care workers are less willing to work in rural areas is professional and social isolation. These are also among the main stressors for rural health care workers, along with workload and work–life balance, with a negative impact on retention. Support strategies are intended to relieve some of these stressors. Support also entails offering sufficient access for rural health care workers to continuing education and professional development programmes. This is an often-mentioned negative side to rural practice that should be addressed not only to improve retention, but also to guarantee continued quality of health care in rural areas. Providing ready access to appropriate psychological, professional and financial support may help alleviate stressors and support retention.

An example of such an intervention is the tutorial programme implemented during internships in the remote region of Finnmark, Norway. In this group-based tutorial programme, social and emotional support is combined with practical support. The programme consists mainly of tutorials offered in peer groups: three meetings of one to three days during the six-month internship with their peers to share experiences and discuss challenges. As this was an addition to an existing internship programme, its added value could be assessed and results showed that this tutorial programme promoted recruitment.

Another kind of supportive intervention is aimed at providing rural health care workers with access to continued professional development. In Australia, a support scheme for rural specialists was developed to provide professional support. Part of this scheme included workshops for continued professional development offered through videoconference. Initial experience with this scheme was positive, with not only increased access to continued education for rural health care workers, but also a reduction in their sense of professional isolation.

The evidence for the added value of supportive interventions for the recruitment and retention of health care workers in rural areas is limited, as these are not the most widely used interventions, and are often implemented in concert with other interventions. The available evidence for both well-being and peer support, as well as support for professional development, is positive but weak, and remains insufficient to draw firm conclusions due to confounding factors and lack of comparison groups.

However, despite this lack of evidence, supportive interventions can have value. Because supportive interventions can directly address factors shown to be negatively related to recruitment and retention of rural health care workers, they should be included in policies aimed at getting more staff into rural areas.

Some specific policy recommendations for the use of personal and professional support are given in a 2010 WHO report, including facilitating cooperation between health care workers from better-served areas and underserved areas; developing and supporting career development programmes and providing senior posts in rural areas so that health care workers can move up the career path without necessarily leaving rural areas; and supporting the development of professional networks.
Shifting tasks to more readily available health care professionals

In contrast to the previous strategies, which focus on increasing primary care physicians in rural areas, task shifting – the delegation of certain care tasks to a different type of health care worker – is intended to increase health care capacity by transferring tasks from one group of health care workers (usually physicians) to more readily available health care workers (usually nurses or physician assistants).

Changes in the organization and delivery of primary care have created the need for nurses to assume new roles (61). In these new roles, nurses provide many functions of primary care. This offers a solution to the capacity problem in rural and remote areas and offers nurses the opportunity to expand their roles and develop professionally. In addition to nurses, health care tasks can also be delegated to other health care workers, such as physician assistants, health care assistants or community health workers (62, 63).

An example of the implementation of task shifting is the AGnES project (German abbreviation: GP-supporting, community-based, e-health-assisted, systemic intervention) (Box 4). It entails the delegation of activities originally performed by physicians, especially home visits, to qualified nurses or physician assistants. In a pilot study implemented in Western Pomerania, Germany, home visits to older, multimorbid patients with chronic disease and reduced mobility were delegated to AGnES assistants (nurses). This was supplemented by home telecare to monitor relevant parameters remotely. Patients were trained in the use of this technology by AGnES assistants. Results of this pilot study are positive, with primary care physicians delegating an increasing number of monitoring and intervention tasks to AGnES assistants over the course of the project. The delegation has provided relief to the primary care physicians and was valued as equal to care by primary care physicians by the majority (87.4%) of patients (64).

Many countries with shortages in health personnel are introducing task shifting in primary health care to deal with shortages of physicians. Task shifting is an effective method for addressing health workforce shortages as long as certain conditions are met. The quality of care should be equivalent to before delegation, it must fit within legal and regulatory constraints, and it must be accepted by both the delegating physicians and the patients. Legally, task shifting may not always be possible, as delegation of some tasks is not permitted, such as home visits in the German context (65). Successful implementation of task shifting is probably most strongly affected by primary care physicians’ attitudes and practices (65). In fact, in many countries, physicians’ associations resist the expansion of the scope of medical tasks performed by non-medical professionals in primary care (62). Regarding quality of care, a Cochrane review (66) suggests that appropriately trained nurses can provide as high-quality care as primary care physicians, with similar health outcomes. The available evidence suggests that task shifting within primary care saves primary care physician time, and improves access without compromising patient health (61, 62). It also enhances job satisfaction of nurses and improves their retention (61). Even though most signs are positive, and its effectiveness within hospital settings has been confirmed (62), more methodologically sound research is needed to confirm and quantify the effect of task shifting in primary care on availability of care in rural and remote areas (61, 63).
Although more research is needed, based on the current findings, task shifting can be recommended as a strategy to cope with imbalances in primary care in rural and remote areas. Recommendations for the successful implementation of task shifting include ensuring sufficient funding; ensuring access to the professional development needed to support the role change; providing adequate mentoring and supervision; and providing clarity on the scope of tasks and responsibilities involved (61–63). Another reinforcing factor, which is especially relevant for rural and remote settings, is local education and training provision (62).

Box 4. Rural primary care in Germany

Problem and context
Germany faces a number of problems related to the availability and accessibility of primary care in rural areas, as indicated by the number of studies and discussions on the matter. Germany’s population is ageing, with currently just over 20% aged 65 years and over and just over 5% aged over 80 years. There are large variations in population density between and within regions, with low densities in large areas to the east, in particular in the Länder Mecklenburg-West Pomerania with 71 inhabitants per square kilometre and Brandenburg with 84. Low population density tends to coincide with ageing populations and thus high health care needs, but at the same time problems are faced in the provision of primary care. Germany experiences (and expects to experience increasingly in the future) difficulties in attracting medical students to primary care specialization in general, and even more so in attracting them to rural areas (67).

Policies
A number of measures have been proposed to address these problems, but very few policies have actually been implemented on a large scale. There have been proposals to make medical students more familiar with general practice during their studies and to use rural placements during general practice specialty training. A promising policy that has been piloted is delegation of tasks from primary care physicians to trained physician assistants and nurses in remote rural areas in the north-east of Germany. For example, in the AGnES project, nurses have taken over the time-consuming task of doing home visits (64).

In the area of transport, studies have assessed the support among the population for ride sharing. With the use of information and communications technology and social media, demand and supply can easily be connected. A condition for support is that people trust or know the person they ride with. Additionally, mobile clinics have been used on an experimental basis (68).

Evidence for effectiveness of policies
Researchers at the most north-eastern university, in the city of Greifswald, have developed and evaluated task shifting programmes. The training programme for nurses, through which they qualify to take over primary care physicians’ tasks, was positively evaluated by nurses, primary care physicians and patients. The evaluation of delegation of home visits to nurses was positive.

Within the medical profession, the verbal acceptance of task delegation to nurses and physician assistants seems to be high. However, cooperative working structures between primary care physicians, nurses and physician assistants are still in their infancy. Acceptance is higher among younger primary care physicians and among female primary care physicians, which is reassuring for the future (65).

Sources: Van Den Berg et al. (64), Dini et al. (65), Gibis et al. (67), Schröder et al. (68).
Mobility solutions

Solutions that focus on physically covering the often-large distances between patients and primary care providers in rural settings either bring a health care worker closer to the patient or transport the patient to the health care facility. Judging on the available evidence, the former is implemented much more often than the latter. It should be noted, however, that the latter strategy of transporting the patients may simply most often be arranged by the patients themselves rather than by the health care provider.

In a remote rural district in Germany, a study examined possible mobility solutions involving the transport of patients to primary care facilities (68). It was found that individual transport by car was a very important means of providing access to rural health care. Web-based ride sharing may act as a supplement, but its success depends strongly on familiarity and trustworthiness. Most respondents only considered ride sharing with someone they knew.

There is a wide variety of outreach service models in existence, which can be divided into two broad types: “hub-and-spoke” models, whereby visiting health workers travel to a remote community on a regular basis from a central base; and use of mobile clinics, which travel throughout a certain region without regularly returning to the central base (69). For both types of outreach models to effectively provide primary care, the same guiding principles apply: visiting services should adequately meet community needs, for example through regular and suitably frequent visits; continuity of care provider should be ensured; the providers should be able to build and sustain relationships with patients and the communities being serviced; the visiting service’s impact on the existing resident workforce in the area should be examined; collaborative arrangements should be made with resident staff to ensure integration with existing services; and the service should ideally have prior experience and familiarity with the needs and context of the community (69, 70).

Unfortunately, there is very little research examining the effectiveness of mobility solutions. The available evidence suggests that outreach services may have some short-term benefits, but are associated with significant disadvantages in the long term: the combination of long working hours and lack of professional support can lead to burn-out and drop-out among visiting health care workers, contributing to insufficient development of local primary health care (71). Finally, there is no systematic evidence regarding the effectiveness of solutions involving transporting the patients.

Outreach programmes with mobile health care service delivery may offer a solution to the lack of access in some rural areas, yet because of the negative long-term consequences of outreach services, they are only recommended as a short-term solution to a lack of primary care access in remote areas, and should be accompanied by steps to develop primary care facilities locally (71). Offering services to transport patients from remote locations to primary care providers is a possible solution, but should take legal and logistical constraints into account, as well as patient preferences.
Technological solutions

Technological solutions to health service access problems in rural and remote areas come in different shapes and forms. One of these is remote monitoring technology (RMT), whereby remote interfaces are used to monitor an individual’s health status and transmit this information to a health care provider. Another form is remote consultation of a medical specialist by primary care workers in order to receive help with diagnosis or treatment.

An example of the implementation of RMT in a rural setting is the telehealth initiative in Argyll and Bute, Scotland, which trialled home telehealth monitoring of patients with chronic obstructive pulmonary disease in Scotland. An evaluation in 2010 assessed staff and patient satisfaction, the impact on hospital and general practice attendance, and opinions on the programme of key staff. Home monitoring was associated with high levels of patient satisfaction as well as a reduction in hospital admissions and use of other health services. Patients and staff were generally enthusiastic but also identified potential barriers to development, such as possible additional workload for health care workers (72).

Despite the limited and very heterogeneous evidence so far on type of RMT, method of implementation, and patient and provider characteristics, RMT is a promising innovation to improve health and help manage disease for those in rural areas. Furthermore, the evidence suggests that overall acceptance by health care workers of RMT is good (73). Regarding remote consultation of specialists, evidence on teledermatology is mildly positive; it reduces time to treatment and clinic visits. Furthermore, patients were as satisfied with teledermatology as with clinical dermatology. However, diagnostic accuracy of clinical dermatology was better overall, although accuracy and concordance of teledermatology with clinical dermatology was acceptable. Management accuracy was also equivalent, yet teledermatology was inferior for malignant lesions (74). Evidence on telesonography is inconclusive, as methodological quality of studies is poor (75). The available evidence does suggest that telesonography has comparable diagnostic power to clinical ultrasonography.

Although technological solutions to address imbalances in primary care are promising, they are most suitable for managing chronic illness. These solutions can also be used as a tool to help GPs make decision about diagnosis and referral to specialist care. However, more research and development is needed regarding diagnostic accuracy before telehealth solutions are widely implemented as access routes for rural patients to specialist care. General recommendations for the implementation of telehealth solutions include ensuring adequate infrastructure and training of staff involved; providing clear definition of professional roles and protocols; involving end users in development and implementation; ensuring that technologies fit within primary care workflow; and maintaining quality of clinical care (74).
the population is important because acceptance of and trust in new care arrangements influence their use and even to some extent their therapeutic effects.

• People-centred approach. Current (international) policies emphasize the importance of people-centred care. This implies putting patients as persons at the centre instead of diseases or diagnoses. This is important for changing morbidity patterns and the interrelations between health care and social care. It also implies a population approach that focuses not only on individuals, but also on the population of the area. Solutions for imbalances in primary care in rural and remote areas should therefore focus not on specific diseases, but also on a holistic approach to the health and well-being of people.

• Community involvement. Related to the three previous conditions, solutions to imbalances in primary care should involve the communities concerned and explore the potential of communities to take action to maintain or improve the service level (both in the area of health care and in other areas). Solutions should be paired to policies to strengthen the social structure of local communities, however difficult that is, particularly in areas where population declines, unemployment is high and many people have a lower socioeconomic status.

Box 5 presents some observations on the implementation of primary care policies in post-communist countries that illustrate the importance of these conditions for effective implementation.
Conditions for effective implementation of solutions

For the effectiveness of the solutions described in Chapter 5, we argue that two general conditions are relevant: (a) effective governance and (b) support from relevant stakeholders. Moreover, two more specific conditions linked to current (international) policy aims in health care suggest that rural primary care policies should (c) adopt a people-centred approach and (d) facilitate community involvement.

- **Effective governance policies.** Solutions for imbalances in primary care in rural and remote areas can only work when there is effective governance at national, subnational and local levels. This includes the instruments for health human resource planning and interventions to change the distribution of primary care services. Following the framework of the European Observatory on Health Systems and Policies (76), transparency of policies and policy-making, accountability, participation of stakeholders, organizational integrity and policy capacity are important aspects of effective governance.
• **Support for policies among relevant stakeholders.** In general, the chances of successful implementation of policies are lower when stakeholder support is low. Restrictive and coercive policies that lack some basic level of support lead to unmotivated health care personnel and the risk of low quality of care. Policies with implications for the position of professional groups might have the support of those directly involved, such as physicians working in rural and remote areas, but find resistance from physicians elsewhere that fear diffusion of these policies. Support in
Box 5. Observations from post-communist countries

After the dissolution of the Soviet Union, there was a need to reform the health care systems in the countries formerly belonging to the communist eastern bloc. The development of primary care was a cornerstone. In a number of these countries the state of primary care was assessed using the Primary Care Evaluation Tool (PCET). As many rural primary care practices were included in the PCET studies, a number of observations can be made about rural primary care.

What is true for primary care in general is even more so for primary care in rural and remote areas: it will not develop in the absence of specific policies that prioritize primary care. Strong primary care requires regulated access to specialist and hospital care. In rural and remote areas particularly, sufficient and adequately trained staff and premises and equipment that enable a broad range of services are needed.

The PCET pointed to a discrepancy between policy and practice. The stated policy priority for primary care has not always materialized in practice. Poor governance was an issue in most countries, pointing to the low priority of primary health care, the lack of political will to change, and the slow process of reforms, resulting from limited capacity at the ministry of health. The role of local authorities was underdeveloped. Professional associations and nongovernmental organizations were poorly involved in health policy-making, general practice was not recognized as a medical speciality in all countries, and formal restrictions continued to limit the work of retrained GPs. In rural areas, the official population ratios for GPs were lower because working conditions were more difficult and workload higher. However, practically this was found to be meaningless, because of widespread staff shortages. A vision of human resource planning to anticipate shortages and promote even distribution of available staff was generally missing. Not surprisingly, in most countries becoming a GP was not identified as a favourable career choice. It was associated with a low status and high workload, compared to medical specialists. This was even more so for becoming a GP in rural areas.

Expansion of the range of services was found to be an important aim of primary care reforms. This would improve quality, especially in rural areas with low access to specialist care. However, the service profile of new GPs was only modestly broader than in the past. The provision of medical procedures, such as minor surgery, remained very low, due to lack of equipment and insufficient training. In rural areas premises were often outdated, there was a lack of practice equipment and access to diagnostic facilities was reported as insufficient.

The extension of competencies of GPs required modernization of medical education, including practice-based specialization. As in several countries the general practice model was meant for rural areas only, the willingness of medical universities to develop relevant curricula and to create professorships in general practice was low. Continuing medical education remained old style and not well tuned to the needs of primary care.

Note: The Primary Care Evaluation Tool (PCET) is an instrument developed for the WHO European Region by the WHO Collaborating Centre NIVEL, the Netherlands Institute for Health Services Research. The tool has been implemented in the Russian Federation (pilot), Turkey (pilot), Belarus, Kazakhstan, Republic of Moldova, Romania, Serbia, Slovakia, Tajikistan and Ukraine.
Conclusions and recommendations

Geographical coverage
Although the focus of this report is on the WHO European Region, a substantial portion of the available evidence is from several large countries that have been coping with access to primary care in rural and remote areas for a long time. Most of these, such as Australia, Canada and the United States, are outside the European Region. Within the western part of the European Region, imbalances in primary care are in most countries less severe and more recent, and often the result of changing economies and ageing populations in rural areas. Unfortunately, there is very little evidence from Central and Eastern Europe or from the former Soviet countries in Central Asia. However, the available studies suggest that rural primary care access is also a problem in those countries.

Evidence base
Overall, the evidence base on interventions to correct imbalances in primary care in rural areas is narrow. Findings are limited by a general lack of sufficient methodologically sound research with which to support definitive conclusions about their effectiveness (59). Additionally, the available evidence is biased towards programmes targeting physicians. This is even the case in task shifting programmes, where the availability of nurses might be the next problem to be solved. As a result, the evidence, especially for specific interventions, is not as solid as one would hope, and more systematic research is needed. Nevertheless, the literature does offer indications of the most promising types of interventions and gives valuable recommendations for their implementation.
Recommendations regarding specific policy options

Based on our findings, recommendations can be formulated in the following areas.

- **Task shifting**
  Although more research is needed, based on the current findings, task shifting can be recommended as a strategy to cope with imbalances in primary care in rural and remote areas. Recommendations for the successful implementation of task shifting include ensuring sufficient funding; ensuring access to the professional development needed to support the change; providing adequate mentoring and supervision; and providing clarity on the scope of tasks and responsibilities involved.

- **Selection based on rural background**
  There is strong evidence for the effect of rural background on rural practice of physicians. There is no evidence of the effectiveness of selection on recruitment of other health care workers. Although a feasible recruitment strategy, by itself it will not be enough to negate the shortage of primary care workers in rural and remote areas. Although rural background is a strong predictor of rural practice, the overwhelming majority of rural physicians do not have a rural background.

- **Rural exposure**
  The effectiveness of both undergraduate and postgraduate rural exposure as a strategy to recruit rural physicians has been widely examined, with varying results. The real impact of these programmes is hard to quantify, as trainees self-select for these rural exposures. Rural exposure programmes do have a more general benefit that supports their use regardless of their effect on practice location: it improves the clinical skills of students, and it helps those pre-inclined to practise rurally to prepare for their working lives. Guidelines for implementing rural exposure policies include the following: expose students to primary care practice in an early stage of their education, before specialty preferences are set; structure training programmes to attract candidates who are more likely to enter rural practice; and engage proactively at various points in the “making” of a primary care physician, starting with generating interest in pursuing a medical career among secondary school students.

- **Support**
  The available evidence for well-being and peer support, and for support for professional development, is positive but weak and insufficient to draw firm conclusions. However, despite this lack of evidence, supportive interventions can have value, because they directly address factors shown to be negatively related to recruitment and retention of rural health care workers. Therefore, they should be included in policies aimed at deploying more staff in rural areas. Specific policy recommendations for the use of personal and professional support include the following: facilitate cooperation between health workers from better-served areas and underserved areas; develop and support career development programmes and provide senior posts in rural areas so that health workers can move up the career path without necessarily leaving rural areas; and support the development of professional networks.

- **Mobility solutions**
  Outreach programmes with mobile health care service delivery may offer a solution to the lack of access in some rural areas, yet because of the negative long-term consequences of outreach services, they are only recommended as short-term solutions, and should be accompanied by steps to develop primary care facilities locally. Offering services to transport patients from remote locations to primary care providers is a possible solution, but should take into account legal and logistical constraints, as well as patient preferences.

- **Technological solutions**
  Although technological solutions are promising as ways to address imbalances in primary care, they are most suitable for managing chronic illness. They can also be used as a tool to help primary care physicians make decisions about diagnosis and referral to specialist care. However, more research and development is needed on diagnostic accuracy before telehealth solutions are widely implemented as access routes for rural patients to specialist care. Recommendations for the implementation of telehealth solutions include ensuring adequate infrastructure and training of staff involved; providing clear definition of professional roles and protocols; involving end users in the development and implementation; making sure that technologies fit within the primary care workflow; and maintaining quality of clinical care.
• **Incentives**
  Although widely implemented, there is little agreement on the effectiveness of incentives as a means of addressing the health workforce shortages in rural areas. Generally, the evidence for the effectiveness of various incentive schemes is poor. With inconclusive evidence of its effect, incentives are not recommended as a high-priority policy option. A common finding and recommendation is that for financial incentives to have any real impact, they need to be implemented in combination with other measures. As such, incentives may supplement different policy responses. In addition to combining financial and other incentives with other measures, incentives should be sufficient to compensate the opportunity costs related to rural practice.

• **Coercion**
  Coercive interventions have been implemented by many countries. There is little scientific evidence to support the use of these strategies, however. They do not stimulate health care workers to continue to work in rural areas, and may even have an adverse long-term effect, driving away junior doctors from future rural practice. Despite this, coercion does add to the available workforce, at least during the compulsory period. As such, it can be a viable policy option to help combat acute shortages. Recommendations when using compulsory service requirements include transparency and clarity, and sufficient support.
Overarching recommendations

- **Use of evidence**
  This scoping review has shown that the evidence base for policies to redress the rural-urban imbalance in primary care is not strong. Still, policies are being developed and implemented. Therefore, all implemented strategies should be accompanied by systematic monitoring of outcomes in order to adjust programmes as needed and provide evidence for their effectiveness.

- **Programme for cross-national learning**
  Because the rural-urban imbalance seems to be universal, irrespective of the size and population density of countries, there is large potential for learning across countries. Added value could be provided by an international research programme that compares and evaluates policies in this area, taking into account differences in health care and political, social and cultural contexts. The recently published strategic research agenda of the European Union-funded project TO-REACH may provide an opportunity for such a research programme (80).

- **More than physicians alone**
  Looking over the research evidence, it is significant that most research focuses on physicians. However, the rural-urban imbalance in primary care extends to other primary care team members as well. Task shifting policies in rural and remote areas will face problems in attracting and retaining not only physicians, but also other health workers, such as nurses, physiotherapists and support personnel. Successful policies aimed at physicians should be translated to other health workers also.

- **Multifaceted and tailor-made approach**
  Research evidence and practical experience show that strategies should be combined and multifaceted. Policies must address the full range of factors known to be associated with rural and remote primary care worker recruitment and retention. In developing policies, the focus must be on the local situation and context. Interventions should be carefully targeted to areas and professions where workforce supply and retention are the most problematic. Selection of the intervention should be based on a situational analysis, and part of this analysis should consider the transferability of policies and interventions between different health system contexts.

- **Need for bottom-up support**
  An important condition for successful implementation of policies to redress the primary care imbalance is support for policies among health care personnel and the population. The people-centred approach that characterizes primary care assumes not only a focus on the needs of patients and the wider population, but also their involvement in policy-making and implementation. As such, policies in rural and remote areas can be a laboratory for new ways of developing policies and participatory governance.
References


80. Draft strategic research agenda. TO-REACH Consortium. 2015.
Annex 1. Search strategy

The review was undertaken in six stages.

1. In the first stage we developed an analytical framework (see Figure 3 of the report), which informed the search terms and inclusion and exclusion criteria.

2. The second preliminary search stage involved a database search of search terms included in the title or abstract of the reviewed papers. The research literature from January 2008 to June 2018 was captured through searches of the databases of Medline, Cochrane and Embase. The following search terms were used: primary healthcare; primary health care; primary care; general practice; family medicine; rural; remote. This resulted in 4304 unique titles.

3. In the third stage, two reviewers scanned the titles of the articles found. Inclusion and exclusion criteria were:
   - English abstract available;
   - published between 2008 and 2018;
   - should be about primary care services;
   - should be about rural or remote areas;
   - should be within WHO European Region (in addition to primary studies and reviews from the WHO European Region, relevant review studies from outside the European Region were included);
   - should cover one of the following topics:
     - description of the problem of access to primary care in rural or remote areas;
     - causes of the primary care vacuum in rural or remote areas;
     - consequences of the primary care vacuum in rural and remote areas;
     - solutions for the primary care vacuum in rural and remote areas.

   This resulted in 400 selected titles for further screening.

4. In the fourth stage, two reviewers made a further selection of the articles based on their abstracts. This resulted in 52 articles to be included in the scoping review.

5. The fifth stage consisted of summarizing relevant information of these 52 articles, including key findings and recommendations, in the summary table. These articles were used as input for the report.

6. In the final stage, we considered relevant grey literature from within the WHO European Region as additional input for the report. The most important ones were added to the summary table.