


TECHNICAL 
SERIES
**ON PRIMARY
HEALTH CARE**

Primary health care:
closing the gap between
public health and **primary care**
through integration

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).

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Other valuable comments and suggestions were made by WHO collaborating partners and regional and country office staff, and in particular Jan De Maeseneer (Ghent University), Juan Tello (WHO Regional Office for Europe), Briana Rivas Morello (WHO Regional Office for Europe), Nuria Toro (WHO, Geneva) and Shannon Barkley (WHO, Geneva).

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



Key messages

- Most primary health care services have focused on treating illnesses as and when they arise rather than on the prevention of disease.
- Most health systems are based on an outdated “disease model” which cannot meet the individual and community health needs of the populations in today’s rapidly changing world.
- With advances in interventional public health, personal and community services need to be provided through an integrated service.
- Ageing, population growth, the rising burden of noncommunicable disease and technological advances are driving the transformation of primary care.
- A comprehensive primary care that reaches everyone is the cornerstone of achieving universal health coverage: “leave no one behind”.
- Securing the health of the whole population cannot be attained without universal coverage achieved through effective comprehensive primary health care that focuses not only on disease but also on health and how to improve it.
- Strengthening public health with universal coverage and access to all, irrespective of their ability to pay for it, should be the aim of all modern health systems.
- The six models of integration described in this report provide an opportunity to focus service around the population needs to improve health and longevity.



Executive summary

Modern primary health care emerged when gross health inequalities became a global concern. Forty years ago, the Declaration of Alma-Ata endorsed primary health care as the means of attaining the World Health Organization's goal of Health for All. With declining premature mortality, rising longevity, and an increase in healthy lifestyle, the fitness-for-purpose of current health systems can be questioned. The current disease-focused model is dated and proactive approaches to health through strong and effective primary care are needed. Such primary care should integrate most of the public health functions to address population health needs at the individual and community levels. The question is, how can we integrate public health into primary care and what are the possible models? There are various possible models of integration of public health into primary care. These could be applied alone or in combination, but all can potentially achieve health gains.



Introduction

Modern primary health care emerged when gross health inequalities became a global concern (1). The Declaration of Alma-Ata, 40 years ago, endorsed primary health care as the means of attaining the World Health Organization's goal of health for all (2,3). It was a global health milestone of the 20th century and, crucially, identified primary health care as a fundamental human right and a key factor in attaining equitable health for everyone. Strong health systems founded on the primary health care approach have made substantial gains in population health. Coupled with improvements in living standards and socioeconomic development, people are living longer, with a more healthy life, and premature mortality has declined (4–6). However, such progress is in jeopardy as the burden of chronic conditions and associated risk factors are on the rise (5,7,8). Many of these risk factors, such as smoking, obesity and diabetes, are linked closely to the social, economic, environmental and commercial determinants of health that, in turn, influence behaviour. An additional challenge to health is that the people most affected by these determinants are also more likely to have poor health literacy and are less likely to access health services (9,10).

Primary health care has three main elements: 1) primary care and essential public health functions as the core of integrated services, 2) multisectoral policy and action, 3) empowered people and communities. This paper focuses on the first element and describes ways in which primary care and public health can be effectively integrated to achieve population health benefits.

In many settings, primary care, which is the first contact of people with health services that are continuous, comprehensive and coordinated, has, too often, been focused on treating illness as and when it arises rather than preventing disease in the first place. Modern public health interventions at the individual and population levels aim to prevent disease, protect and promote health, and ensure the greatest threats to population health are addressed (including surveillance and monitoring) (11,12).

Integrating a public health approach into primary care could be an effective way of preventing disease in local communities, thus reducing the demand on primary care and improving the health of the population. Integrating public health functions into primary care involves many different actions including: enabling primary care to deliver more protective, promotive and preventive services to a defined population; improving communication and coordination between public health authorities and primary care providers and managers; sharing knowledge and data to evaluate the impact of both individual- and population-focused services on health; and strengthening the surveillance function of primary care and more effectively linking this to public health surveillance.

Methods for integration of primary care and public health should consider the existing structures, goals, needs, capacities, resources and competencies available within the given context (11). Integration should also address the inequities in health service provision.

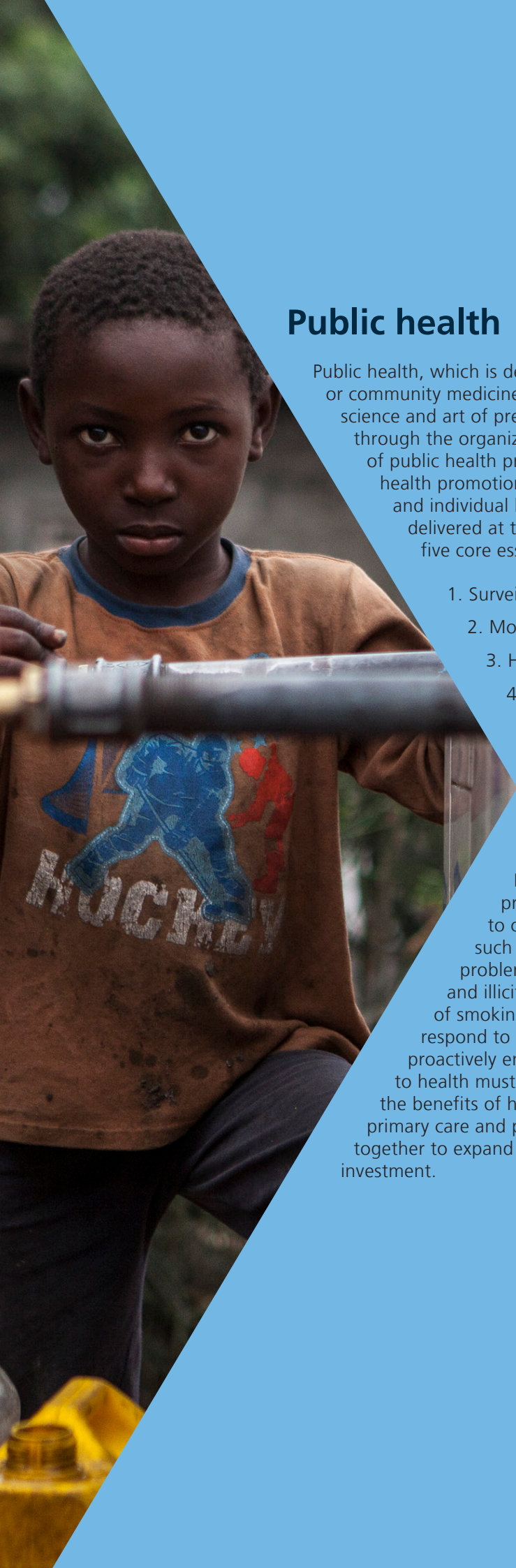
This paper reviews the various approaches reported in the literature that have been taken to integrate public health and primary care and summarizes both the strengths and weaknesses of each approach in order to advise policy-makers of the different approaches available. We have used the WHO definition for health, the Starfield definition for primary care and Acheson (1988) for public health (based on Winslow 1920) (13–17).

Primary care

Worldwide primary care has been shown to be associated with enhanced access to health services, better health outcomes, and a decrease in hospitalization and emergency department visits (18). Primary care can also help counteract the negative effect of poor economic conditions on health (19). Traditional primary care focuses on personal health care services and continuity of care. The curative, “disease model” of the 1970s, which is still common today in many countries, is changing rapidly. Ageing, population growth, a rising burden of chronic, noncommunicable diseases and multimorbidity, and technological advances are driving the transformation of primary care. These demographic and epidemiological shifts require primary care to focus on prevention and quality of life, and encourage a proactive population management approach that targets individuals and groups that are most affected by the structural determinants of health. To do this effectively requires linking with public health (20). Proactive primary care means that radical changes need to be made to the current model of service, which include integrating key public health functions and interventions into primary care services. In her definition of primary care, Barbara Starfield indicated the need to move to a health model that provides “the first level of contact with the health system to promote health, prevent illness, care for common illnesses, and manage on-going health problems” (16,21). With this comprehensive and holistic approach, over 95% of patient contact with the health service would take place in primary care (17). It can therefore be argued that primary care is the backbone of any effective health system that aims for better population health. In settings where primary care has been effectively deployed and supported with adequate training and resources, family physicians only refer around 5% of patients from consultations onto secondary care (22–24). Patient satisfaction is high and at a decidedly low cost to the health system (19,25,26). The evidence is very clear, a health system that is not primary care-led is a weak and expensive system. Indeed, countries more oriented to primary care have populations with better health and services that are delivered at a lower cost (19,20,27,28).

Transforming primary care to have a proactive role in promoting health and preventing disease in addition to diagnosis, treatment and care is a logical next step in primary care development. Primary care, particularly when established with a clear responsibility for a population (empanelment or registration), is the building block of public health and is the appropriate location for local public health interventions. This raises the question: what is public health in the context of primary care? And, how can integration be achieved?





Public health

Public health, which is described in some countries as public health medicine, or community medicine, is a multidisciplinary specialty, defined as “the science and art of preventing disease, prolonging life and promoting health through the organized efforts of society” (13). The multifaceted functions of public health provide the necessary tools to improve health through health promotion, protection and disease prevention at population and individual levels. Not all public health functions however can be delivered at the primary care level. In the WHO European Region, the five core essential public health operations are:

1. Surveillance
2. Monitoring preparedness for response
3. Health protection
4. Health promotion
5. Disease prevention.

There is enormous potential for primary care to take a more proactive role in contributing to tackling some of these essential public health operations, especially, promoting health and disease prevention. Public health guidance from the United Kingdom’s National Institute for Health and Care Excellence advises primary care professionals such as family physicians to opportunistically and proactively carry out activities such as short interventions to identify, reduce and prevent problematic use, abuse and dependence on alcohol, tobacco and illicit drugs, among others (27–32). However, in the case of smoking, for example, primary care professionals tend only to respond to requests for help with giving up smoking rather than proactively engaging with existing smokers. Such reactive approaches to health must become more proactive ones (12,31). Evidence of the benefits of health promotion within primary care is growing, and primary care and public health professionals and academics are working together to expand the evidence base with a particular interest in return on investment.



Public health and primary care: the value of two natural allies

A health system is partly the product of a country's culture and the way people are willing to fund it to ensure equity and fairness. There is no perfect health system, each has strengths and weaknesses (26). However, the most effective systems are those able to secure the health of the whole population (33). This cannot be attained without universal health coverage achieved through effective comprehensive primary care focusing not only on disease but also on health and how to improve it. A strong proactive public health function, therefore, is required within primary care to protect the health of the population and the individual, promote health, and prevent disease.

Proactive primary care saves lives, reduces the burden of disease and improves quality of life. It is also an important means to improve productivity and provide a seamless service (34).

Considerable overlap occurs in roles, responsibilities and functions between public health and primary care, especially in protection and promotion of health, and disease and injury prevention (1). There are numerous possible scenarios of integration. One envisages full integration, where the structures, processes, and delivery of care for both public health and primary care are the responsibility of the same entity. A second is based on two separate organizational structures, where professionals work together and share the same aim and objectives. A third sees integration fostered by a continuity of information and communication channels, supported by routine coordination mechanisms (colocation or scheduled meetings with clear delineation of roles and responsibilities). In any scenario, we need to take into account the fact that both primary care and public health services are in high demand and under resourced. Mechanisms for integration, therefore, should look for mutual benefits and efficiency gains as well as opportunities to increase available resources to mutual benefit (e.g. seek grant funding for joint projects that are particularly effective) (35). However, evidence clearly shows that both primary care and public health would improve if their respective strengths were augmented through partnership and integration (5).

The real challenge to any health system is how to strengthen the relationship between public health and primary care to synergistically enhance both functions. Countries such as Brazil, Canada, and the United Kingdom provide some excellent examples of strong relationships between these two specialties. Public health achieves this through assessing health needs, defining priorities, providing evidence of effectiveness, developing strategies for population-wide interventions in promoting health, protecting health, preventing disease and injury, and evaluating health impacts. Primary care focuses on personal and family care interacting with the person in a holistic way (36). Through such personal and continuous care, primary care is able to implement public health strategies for healthy lifestyle (for example, smoking cessation, dietary advice, weight control, active living and control of stress), early recognition of disease (e.g. systematic and opportunistic screening), early intervention to tackle risk factors (e.g. hypertension, hyperlipidaemia and smoking), and health protection (e.g. immunization including the influenza vaccine and notifications of infectious disease). With the decline of infectious disease and increase in lifestyle-related diseases and conditions, integration of public health and primary care is vital to reduce the burden of chronic conditions (noncommunicable diseases) on communities, reduce the costs to the health system and improve health equity (37).

In many settings primary care teams have moved beyond individual-level work to assess and tackle structural determinants of disease at the local population level, for instance housing, transport, and the availability of fruit and vegetables. Primary care holds extensive information about the health profile of the local community, and professionals often develop a deep understanding of local social issues that drive illness. By proactively analysing the leading causes of ill health at the practice population level, primary care is able to generate unique public health insights.



Models and experience of integrating public health and primary care

The evidence generated for this paper highlighted five primary care strategies and operational changes needed to integrate public health actions into primary care (19,35,38–80).

- Targeting health improvement actions and resources to the most disadvantaged areas.
- Building capacity in primary care to deliver proactive promotion and preventive care.
- Working beyond basic, essential and limited packages of care (terms not relevant to modern “family medicine” practice) to a full range of services needed for first contact with the health system.
- Providing early interventions to prevent escalation of health care needs.
- Taking a broader perspective so that care for individuals is framed in the context of population outcomes (e.g. equity and social cohesion).

The literature provides several possible models to integrate public health into primary care within the five strategic directions mentioned above. Six models were identified as possible means of achieving integration. These are based on adaptability to health systems to achieve best possible results through integration. These models could be implemented individually or in combination.

Public health professionals integrated into primary care

In this model, there is no suggestion of full integration of public health and primary care, but integration of some public health professionals into primary care teams (39). The Islamic Republic of Iran has adopted such a model in rural primary care for the past 35 years, although it has not been extended to urban areas (40). One of the aims of the primary care network in the Islamic Republic of Iran was to integrate malaria control, family planning, school health and environmental health with primary care services (41).

Brazil has also integrated many of the public health functions into primary care through community health workers (42,43). This is in line with WHO recommendations on the role of health workers (44). These workers are involved directly with families in supporting chronic disease management, triaging conditions like anaemia or dehydration, managing disease-specific programmes (tuberculosis), providing sexual health advice, delivering pre- and postnatal care, including breastfeeding assistance and child development assessment, providing cancer screening, supporting immunization programmes, monitoring infectious disease, and providing health promotion advice (44–46). In South Africa, community health workers are being trained in new skills to screen for cardiovascular risks and diabetes, complementing their traditional role in addressing HIV and malaria (47).

In the United States of America, there are many initiatives to use community health networks, where public health agencies and primary care providers work with local communities to address local needs. These needs are mainly public health in nature and not related to medical services (48,49).

Placing a public health physician within practices may not be the best approach to transfer public health knowledge; however, issues important to the practice lend themselves to such an intervention with potential long-term benefit for public health and primary care and the population they serve (50). Time constraints limit the ability of family physicians to comply with preventive services recommendations. A study exploring the ability of a family physician to provide the recommended preventive services to a patient panel of 2500 people found that 7.4 hours per working day were required just to provide the preventive services (51).

Public health services and primary care providers working together

These two services remain as separate organizations but work on a shared vision and agreed objectives to improve health. Primary care professionals provide personal public health interventions to complement population-level interventions carried out by public health practitioners (52,53). Such collaborative work is popular in the United States with many examples from New York to improve the health of the city's residents (54), Florida to increase uptake of influenza vaccination (55), Michigan to tackle diabetes (56) and North Carolina to improve the health outcomes of low-income mothers and infants (57), to list just a few. Such approaches may help improve communication and minimize separated insular thinking but may not reduce costs substantially or pool resources and they may be influenced by the changing roles of personnel (58). Some countries have adopted similar models of cooperation to tackle specific areas of health concern as the simplest approach to bring the two services together without organizational change. For example, in Australia and Canada, the two services collaborate to address chronic disease prevention (59,60). In the Netherlands, cooperation between public health and primary care has demonstrated success in preventing cardiovascular diseases (61).



Comprehensive and proactive benefit packages that include public health

The United States Medicare system recognized that preventive interventions at a personal care level within primary care save money and provide an additional benefit to health services. Medicare provides a range of public health (preventive) services within primary care (62).

Burton and colleagues investigated whether adding preventive services to the health service benefits of older Medicare beneficiaries would affect utilization and costs of Medicare. There appeared to be a modest health benefit with no negative effect on cost. This triggered a discussion to extend Medicare benefits to include a general preventive visit from primary care clinicians, thus moving from essential to comprehensive services. A yearly preventive visit was not sufficient to result in a statistically significant reduction in smoking and alcohol use; however, there may be moderate benefit from preventive visits, especially if prevention occurs more regularly (63–68). Cohen and colleagues suggest that substantial resources can be saved through prevention (66). Medicare now provides a range of preventive public health services within their primary care programme (about 20 public health interventions). Similar packages, with or without copayments, have been introduced in some European (67) and low- and middle-income countries (68).

Primary care services within public health settings

In countries where primary care does not provide universal coverage and especially those operating largely under the private sector (the United States, for example), public health agencies, such as the Iowa Department of Public Health, have undertaken a role as a health provider for a specific population or as a last resort for the socially disadvantaged (69). Such a model tends to develop through opportunity rather than by design and addresses only the particular needs of specific groups, not the entire population. Such a model should be the exception and not the rule. Strengthening public health with universal health coverage and access to all, irrespective of ability to pay, should be the aim of all modern health systems.

Building public health incentives in primary care

The United Kingdom is one of the countries with longstanding experience of incentives for health. Over its 70-year history, the United Kingdom's National Health Service has introduced various changes and incentives to promote the health of the population through general practice, improve the quality of services and target certain conditions and populations (70,71).



Before the National Health Service introduced the Quality and Outcome Framework, there were various experiences of the use of incentives for general practice. These incentives led to an increase in immunization rates, cervical screening (72), breast cancer screening and many public health interventions. In 2004, the Quality and Outcome Framework was introduced as part of the new general medical service contract, which includes incentive schemes for general practices that reward them for how well they care for patients and provide good-quality promotion and preventative care services. The indicators of the quality and outcome framework are targets, which, if reached, result in extra payments to the practice (73–78). Estonia is another country that has introduced a bonus scheme based on quality to incentivize the inclusion of public health functions within primary care (79).

Multidisciplinary training of primary care staff in public health

With accumulating evidence of the value of public health interventions in primary care, the importance of providing person-centred care (36), the importance of tackling the growing number of chronic conditions and encouraging positive and healthy lifestyles in individuals and communities (37), many primary care doctors and nurses in many countries are undertaking training in public health.

In the United Kingdom, some family physicians are developing a special interest in public health through formal training programmes described as “GPs with special interest” (80). Such a model of integration may be the best for effectively integrating these two services to improve the population’s health. Similar models have been developed in the United States.

Many members of the primary care team shy away from delivering effective public health services as they lack the skills needed. A new training curriculum is needed that provides a wide range of skills related to the prevention of ill health and public health. Additional training in public health is of great value to the skills of doctors and nurses in family practice. Short courses in interventional public health may be of additional value to the service and enhance the capacity of family doctors and primary care teams. Public health training should be extended to all members of the primary care team.

However, to provide comprehensive primary care in an integrated health system, primary care teams need at least 0.7 family physicians per 1000 population, and the coverage should be 100% of the population within one system (or under one umbrella), free at point of care (35).



Conclusion

A proactive primary care approach has a crucial role in promoting healthier lifestyles through every contact with the public. Primary care professionals should “make every contact count”, which is about making healthy life a priority. Primary care physicians and nurses will need to be trained in public health to become proactive in promoting health and well-being. Shifting to prevention could alter the shape of the workforce, with more people delivering early intervention and public health services rather than interventions for acute illness. The six models described provide good opportunities to radically change health services to deliver a truly comprehensive service that can help achieve universal health coverage and fulfil the dream of the Declaration of Alma-Ata stated 40 years ago: health for all. Through integration alone, we can close the gap between primary care and public health, and move closer to that goal.

References

1. Primary care: Now more than ever. World Health Report 2008. Geneva: World Health Organization; 2008 (<https://www.who.int/whr/2008/en/>, accessed 10 October 2018).
2. Mahler H. The meaning of "Health for All by the Year 2000". *Am J Public Health*. 2016;106:36–8. doi: 10.2105/AJPH.2016.106136
3. World Health Organization. Declaration of Alma-Ata. International Conference on Primary Health Care, Alma-Ata, USSR, 6–12 September 1978 http://www.who.int/publications/almaata_declaration_en.pdf, accessed 6 October 2018).
4. Shetty P. Grey matter: ageing in developing countries. *Lancet*. 2012;379:1285–7. doi: 10.1016/S0140-6736(12)60541-8
5. Wang W, Shi L, Yin A, Mao Z, Maitland E, Nicholas S, et al. Contribution of primary care to health: an individual level analysis from Tibet, China. *Int J Equity Health*. 2015;4:107. doi: 10.1186/s12939-015-0255-y
6. Ageing well: a global priority. *Lancet*. 2012;379:1274. doi: 10.1016/S0140-6736(12)60518-2
7. Fransham M, Dorling D. Have mortality improvements stalled in England? *BMJ*. 2017;357:j1946. doi: 10.1136/bmj.j1946
8. Mokdad AH, Forouzanfar MH, Daoud F, Charbel E, Moradi-Lakeh M, Khalil I, et al. Health in times of uncertainty in the eastern Mediterranean region. 1990–2013: A systematic analysis for the Global Burden of Disease Study 2013. *Lancet Glob Health*. 2016;4:e704–13 doi: 10.1016/S2214-109X(16)30168-1
9. Feng X, Girosi F, McRee IS. People with multiple unhealthy lifestyles are less likely to consult primary healthcare *BMC Fam Prac*. 2014;15:126. doi: 10.1186/1471-2296-15-126.
10. Jorm LR, Shepherd LC, Rogers KD, Blyth FM. Smoking and use of primary care services: findings from a population-based cohort study linked with administrative claims data. *BMC Health Serv Res*. 2012;12:263. doi:10.1186/1472-6963-12-263
11. Beard JR, Bloom B. Towards a comprehensive public health response to population ageing. *Lancet*. 2014;385:658–61. doi:10.1016/S0140-6736(14)61461-6
12. Boyce T, Peckham S, Hann A, Trenholm S. A pro-active approach: health promotion and ill-health prevention. London: King's Fund; 2010.
13. Acheson D. Public health in England. Report of the Committee of Inquiry into the future development of the public health function. London: HMSO; 1988.
14. Winslow CEA. The untilled field of public health. *Modern Med*. 1920;2:183–19.
15. World Health Organization. Constitution of WHO: principles. 1946 (<https://www.who.int/about/mission/en/>, accessed 14 October 2018)
16. Starfield B. Primary care: concept, evaluation, and policy. London: Oxford University Press; 1992.
17. Royal College of General Practice. Discover general practice. December 2017. (<http://www.rcgp.org.uk/training-exams/discover-general-practice.aspx>, accessed December 2017).
18. Kane RL, Keckhafer G, Flood S, Bershadsky B, Siadaty MS. The effect of Evercare on hospital use. *J Am Geriatr*. 2003;51:1427–34. doi: 10.1046/j.1532-5415.2003.51461
19. Shi L. The impact of primary care: a focused review. *Scientifica (Cairo)*. 2012;2012:43289. doi: 10.6064/2012/432892
20. Transforming primary care. Safe, proactive, personalised care for those who need it most. London: Department of Health; 2014 (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/304139/Transforming_primary_care.pdf, accessed 11 October 2018).
21. Starfield B, Shi L, Macinko J. Contribution of primary care to health systems and health. *Milbank Quarterly*, 2005;83:457–502. doi: 10.1111/j.1468-0009.2005.00409.x
22. National Audit Office. Patient choice at the point of GP referral. London: The Stationery Office; 2005 (<https://www.nao.org.uk/wp-content/uploads/2005/01/0405180.pdf>, accessed 11 October 2018).

23. Foot C, Naylor C, Imison C. The quality of GP diagnosis and referral. London: King's Fund; 2010.
24. Roland M, Everington S. Tackling the crisis in general practice: if general practice fails, the whole NHS fails. *BMJ*. 2016;352:i942. doi: <https://doi.org/10.1136/bmj.i942>
25. Starfield B. Refocusing the system. *N Engl J Med*. 2008;359:2087–91. doi: 10.1056/NEJMp0805763
26. Rawaf S. Medico de familia na saude publica (Family physicians and public health). In: Gusso G, Lopes JMC, editors. *Tratado de medicina de familia e comunidade: principios, formaco et practica (Treatise on family and community medicine: principles, training and practice)*. Porto Alegre: Artmed Editora Ltda; 2012. Volume 1:19–27.
27. Rawaf S. Health in Wandsworth. The independent annual report of the director of public health. London: WPCT; 2004.
28. National Institute for Health and Care Excellence. Four commonly used methods to increase physical activity. NICE; last updated March 2015 (<https://www.nice.org.uk/guidance/PH2>, accessed 11 October 2018).
29. National Institute for Health and Care Excellence. Obesity prevention. NICE; last updated March 2015 (<https://www.nice.org.uk/guidance/CG43>, accessed 11 October 2018).
30. National Institute for Health and Care Excellence. Lipid modification: Cardiovascular risk assessment and the modification of blood lipids for the primary and secondary prevention of cardiovascular disease. NICE; May 2008. (<https://www.nice.org.uk/guidance/CG67>, accessed 11 October 2018).
31. National Institute for Health and Care Excellence. Smoking cessation services in primary care, pharmacies, local authorities and workplaces, particularly for manual working groups, pregnant women and hard to reach communities. NICE; 2008. (<https://www.nice.org.uk/guidance/ph10/documents/smoking-cessation-services-in-primary-care-pharmacies-local-authorities-and-workplaces-particularly-for-manual-working-groups-pregnant-women-and-hard-to-reach-communities-review-proposal-consultation2>, accessed 11 October 2018).
32. National Institute for Health and Care Excellence. Reducing differences in the uptake of immunisations (including targeted vaccines) among children and young people aged under 19 years. NICE; 2009. (<https://www.nice.org.uk/guidance/ph21>).
33. Wanless D. Securing good health for the whole population. Final report. London: HMSO; 2004 (<https://www.southampton.gov.uk/moderngov/documents/s19272/prevention-appx%201%20wanless%20summary.pdf>, accessed 11 October 2018).
34. Baker R, Honeyford K, Levene LS, Mainous AG, Jones DR, Bankart MJ, et al. Population characteristics, mechanisms of primary care and premature mortality in England: a cross-sectional study. *BMJ Open*. 2016;6:e009981. doi:10.1136/bmjopen-2015-009981
35. Rawaf S. A proactive general practice: integrating public health into primary care. *London J Prim Care (Abingdon)*. 2018;10:17–8. doi: 10.1080/17571472.2018.1445946
36. Amati F, McDonald A, Majeed A, Dubois E, Rawaf S. Implementation and evaluation of patient-centred care in experimental studies from 2000–2010: systematic review. *Int J Person Centred Med*. 2011;1. doi: 10.5750/ijpcm.v1i2.47
37. Ruano A, Furler J, Shi L. Interventions in primary care and their contributions to improving equity in health. *Int J Equity Health*. 2015;14:151. doi: 10.1186/s12939-015-0284-6
38. Bream E. Prevention 2010: engagement and concordance. Evidence overview [Online]. Scottish Public Health Network; 2006. (<https://www.gov.scot/Resource/Doc/924/0031658.pdf>, accessed 11 October 2018).
39. Ciliska D, Ehrlich A, DeGuzman A. Public health and primary care. A report. Ontario: McMaster University; 2005 (<http://www.ontla.on.ca/library/repository/mon/15000/264970.pdf>, accessed 11 October 2018).
40. Asadi-Lari M, Sayyari AA, Akbari ME, Gray D. Public health improvement

- in Iran--lessons from the last 20 years. *Public Health*. 2004;118:395–402. doi: 10.1016/j.puhe.2004.05.011
41. Manenti A. Health situation in Iran. *Med J Islamic Republic of Iran*. 2011;25:1–7.
 42. Macinko J, Harris MJ, Rocha MG. Brazil's National Program for Improving Primary Care Access and Quality (PMAQ): Fulfilling the potential of the world's largest payment for performance system in primary care. *J Ambulatory Care Management*, 2017;40: S4-S11. doi:10.1097/JAC.000000000000189
 43. Macinko J, Harris MJ. International health care systems Brazil's family health strategy: delivering community-based primary care in a universal health system. *N Engl J Med*. 2015;372:2177–81. doi: 10.1056/NEJMc1509056
 44. WHO recommendations: optimizing health worker roles to improve access to key maternal and newborn health interventions through task shifting. Geneva: World Health Organization; 2012 (http://apps.who.int/iris/bitstream/handle/10665/77764/9789241504843_eng.pdf?sequence=1, accessed 11 October 2018).
 45. Wadge H, Bhatti Y, Carter A, Harris M, Parston G, Darzi A. Brazil's family health strategy: using community health care workers to provide primary care. The Commonwealth Fund, 13 Dec 2016 (<https://www.commonwealthfund.org/publications/case-study/2016/dec/brazils-family-health-strategy-using-community-health-care-workers>, accessed 11 October 2018).
 46. Johnson CD, Noyes J, Haines A, Thomas K, Stockport C, Ribas AN, et al. Learning from the Brazilian community health worker model in north Wales. *Glob Health*. 2013;9:25. doi:10.1186/1744-8603-9-25
 47. Puoane T, Abrahams- Gessel S, Gaziano TA, Levitt N. Training community health workers to screen for cardiovascular disease risk in the community: experiences from Cape Town, South Africa. *Cadiovasc J Afr*. 2017;28:170–5. doi: 10.5830/CVJA-2016-077
 48. Steiner BD, Denham AC, Ashkin E, Newton WP, Wroth T, Dobson LA. Community care of North Carolina: Improving care through community health networks. *Ann Fam Med*. 2008;6:361–7. doi:10.1370/afm.866
 49. Sloane PD, Bates J, Gadon M, Irmiter C, Donahue K. Effective clinical partnerships between primary care medical practices and public health agencies. Chicago, IL: American Medical Association; 2009.
 50. Ayres PJ, Pollock CT, Wilson A. Practical public health in a primary care setting: Discrete projects confer discrete benefits but a long-term relationship is needed. *J Manag Med*. 1996;10:36–48.
 51. Yarnall KSH, Pollak I, Ostbye T, Krause KM, Michener J. Primary care: is there enough time for prevention? *Am J Public Health*. 2003;93:635–41.
 52. Larson K, Levy J, Rome MG, Matte TD, Silver LD, Frieden TR. Public health detailing: A strategy to improve the delivery of clinical preventive services in New York City. *Public Health Rep*. 2006;121:228–34. doi: 10.1177/003335490612100302
 53. Rothenich, SF, Woolf SH, Johnson RE, Devers KJ, Flores SK, Villars P, et al. Promoting primary care smoking-cessation support with quitlines: The QuitLink randomized controlled trial. *Am J Prev Med*. 2010;38:367–74. doi: 10.1016/j.amepre.2010.01.008
 54. Frieden, T. Take care New York: A focused health policy. *J Urban Health*. 2004;81:314–6. doi: 10.1093/jurban/jth118
 55. Tran CH, McElrath J, Hughes P, Ryan K, Munden J, Castleman JB, et al. Implementing a community-supported school-based influenza immunization program. *Biosecur Bioterror*. 2010;8:331–41. doi: 10.1089/bsp.2010.0029.
 56. Constance A, Crawford K, Hare J, Parker S, Scott A, Stys A, et al. MDON: A network of community partnerships. *Fam Community Health*. 2002;25:52–60.
 57. Margolis PA, Stevens R, Bordley WC, Stuart J, Harlan C, Keyes-Elstein L, et al. From concept to application: The impact of a community-wide intervention to improve the delivery of preventive services to children. *Pediatrics*. 2001;108:E42.
 58. Valaitis RK, O'Mara L, Wong ST, MacDonald M, Murray N, Martin-Misener R, et al. Strengthening primary health care through primary care and public health collaboration: the influence of intrapersonal and interpersonal factors. *Prim Health Care Res Dev*. 2018;19:1–14. doi:10.1017/S146342361700089
 59. National Public Health Partnership in Australia. Preventing chronic disease: a strategic framework. Background paper. Victoria, Australia: National Public Health Partnership Secretariat; 2001.

60. Hutchison B, Abelson J, Lavis J. Primary care in Canada: so much innovation, so little change. *Health Affairs (Millwood)*. 2001;20:116–31.
61. van Ree J. The role of primary care in public health. In: Jones R, Britten N, Culpepper L, Gass D, Grol R, Mant D, et al., editors. *Oxford textbook of primary medical care*. Vol. 1. New York: Oxford University Press; 2004:43–50.
62. *Staying healthy. Medicare's preventive services*. Washington DC: Centers for Medicare and Medicaid Services; 2004
63. Burton LC, Paglia MJ, German P, Shapiro S, Damiano AM, Steinwachs, D et al. The effect among older persons of a general preventive visit on three health behaviors: smoking, excessive alcohol drinking, and sedentary lifestyle. *Prev Med*. 1995;24:492–7. doi: 10.1006/pmed.1995.1078
64. Burton LC, Paglia MJ, German P, Shapiro S, Brant LJ, Richards TM, et al. Preventive services for the elderly: would coverage affect utilization and costs under Medicare? *Am J Public Health*. 1995;85:387–91.
65. Scott TL, Gazmararian JA, Williams MV, Baker DW. Health literacy and preventive health care use among Medicare enrollees in a managed care organization. *Med Care*. 2002;40:395–404.
66. Cohen JT, Neumann PJ, Weinstein MC. Does preventive care save money? Health economics and the presidential candidates. *N Engl J Med*. 2008;358:661–3. doi: 10.1056/NEJMp0708558
67. Hrabac B, Ljubic B, Bagaric I. Basic package of health entitlements and solidarity in the Federation of Bosnia and Herzegovina. *Croat Med J*. 2000;41(3):287–93.
68. Frenk J; González-Pier E, Gómez-Dantés O, Lezana MA, Knaul FM. Comprehensive reform to improve health system performance in Mexico. *Lancet*. 2006;368:1524–34. doi: 10.1016/S0140-6736(06)69564-0
69. Silow-Carroll, S. 2008. Iowa's 1st five initiative: improving early childhood developmental services through public-private partnerships. Issue Brief. New York: Commonwealth Fund; 2008.
70. Schneider EC, Sarnak DO, Squires D, Shah A, Doty MM. *Mirror, Mirror: international comparison reflects flaws and opportunities for better US healthcare*. New York: Commonwealth Fund; 2017 (<http://www.commonwealthfund.org/interactives/2017/july/mirror-mirror/>, accessed 11 October 2018).
71. Newton NJ, Briggs ADM, Murray CJL, Dicker D, Foreman KJ, Wang H, et al. Changes in health in England, with analysis by English regions and areas of deprivation, 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013. *Lancet*. 2015;386:2277–4. doi: 10.1016/S0140-6736(15)00195-6
72. Baker D, Middleton E. Cervical screening and health inequality in England in the 1990s. *J Epidemiol Community Health*. 2003;57:417. doi: 10.1136/jech.57.6.417
73. Campbell SM, Reeves D, Kontopantelis E, Sibbald B, Roland M. Effects of pay for performance on the quality of primary care in England. *N Engl J Med*. 2009;361:368–78. doi:10.1056/NEJMSa0807651
74. National Institute for Health and Care Excellence. About the Quality and Outcomes Framework (QOF). NICE; 2011. <https://www.nice.org.uk/standards-and-indicators/qofindicators>
75. Roland M, Guthrie B. Quality and Outcomes Framework: what have we learnt? *BMJ*. 2017;354:i4060. doi:10.1136/bmj.j4681
76. Marshall M, Roland M. The future of the Quality and Outcomes Framework in England. *BMJ*. 2017;359:j4681. doi:10.1136/bmj.j4681
77. Kontopantelis E, Olier I, Planner C, Reeves D, Ashcroft DM, Gask L. Primary care consultation rates among people with and without severe mental illness: a UK cohort study using the Clinical Practice Research Datalink. *BMJ Open*. 2015;5:e008650. doi:10.1136/bmjopen-2015-008650
78. Robson R, Boomla K. Quality and Outcomes Framework could be a unique new national information resource. *BMJ*. 2017;359:j5502. doi:10.1136/bmj.j5502
79. Merilind E, Salupere R, Vastra K, Kalda R. Pay for performance of Estonian family doctors and impact of different practice- and patient-related characteristics on a good outcome: A quantitative assessment. *Medicina*, 2016;52:192–8. doi: 10.1016/j.medic.2016.04.003
80. Bradley S, McKelvey SD. General practitioners with a special interest in public health; at last a way to deliver public health in primary care. *J Epidemiol Community Health* 2005;59:920–923. doi: 10.1136/jech.2005.034405

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