

Diffusion of complex health innovations— implementation of primary health care reforms in Bosnia and Herzegovina

Rifat A Atun,^{1*} Ioannis Kyratsis,¹ Gordan Jelic,² Drazenka Rados-Malicbegovic³ and
Ipek Gurol-Urganci¹

Accepted 31 May 2006

Most transition countries in Central and Eastern Europe and Central Asia are engaged in health reform initiatives aimed at introducing primary health care (PHC) centred on family medicine to enhance performance of their health systems. But, in these countries the introduction of PHC reforms has been particularly challenging; while some have managed to introduce pilots, many have failed to these scale up.

Using an innovation lens, we examine the introduction and diffusion of family-medicine-centred PHC reforms in Bosnia and Herzegovina (BiH), which experienced bitter ethnic conflicts that destroyed much of the health systems infrastructure. The study was conducted in 2004–05 over a 18-month period and involved both qualitative and quantitative methods of inquiry. In this study we report the findings of the qualitative research, which involved in-depth interviews in three stages with key informants that were purposively sampled. In our research, we applied a proprietary analytical framework which enables simultaneous and holistic analysis of the context, the innovation, the adopters and the interactions between them over time.

While many transition countries have struggled with the introduction of family-medicine-centred PHC reforms, in spite of considerable resource constraints and a challenging post-war context, within a few years, BiH has managed to scale up multifaceted reforms to cover over 25% of the country. Our analysis reveals a complex setting and bidirectional interaction between the innovation, adopters and the context, which have collectively influenced the diffusion process. Family-medicine-centred PHC reform is a complex innovation— involving organizational, financial, clinical and relational changes—within a complex adaptive system. An important factor influencing the adoption of this complex innovation in BiH was the perceived benefits of the innovation: benefits which accrue to the users, family physicians, nurses and policy makers. In the case of BiH, policies or the innovation are not simply disseminated, but rather assimilated into the health system. The assimilation and implementation of the new PHC model relied on the consensus of a diverse group of adopters; the changes brought by the reforms were aligned with the expectations of the adopters: this created a ‘receptive context’ for adoption and diffusion of the innovation. The new family-medicine-centred PHC service model had a major impact on professional identity, inter-professional

¹ Centre for Health Management, Tanaka Business School, Imperial College London, South Kensington Campus, London, UK.

² Ministry of Health and Social Welfare, Banja Luka, Republika Srpska.

³ Ministry of Health, Sarajevo, Federation of Bosnia and Herzegovina.

*Corresponding author. Director, Centre for Health Management Tanaka Business School, South Kensington Campus, Imperial College London, London, SW7 2AZ, UK. E-mail: r.atun@imperial.ac.uk

relationships and organizational routines. The post-conflict context was perceived as an opportunity to introduce the new model and implement transformational change, while the complex government structure meant the process of diffusion was as important as the innovation itself. In BiH, a holistic approach—comprising multifaceted and simultaneous interventions at multiple levels of the health system—reduced ‘policy resistance’ and enhanced the adoption and diffusion of the PHC reforms.

Keywords Innovation, primary health care, family medicine, health systems, Bosnia and Herzegovina

KEY MESSAGES

- Family medicine centred primary health care reform is a complex innovation—involving organizational, financial, clinical and relational changes.
- Such innovations are not simply disseminated but rather assimilated into the health system, the process of which is influenced by the stakeholder perceptions of the benefits of the innovation, the level of consensus amongst adopters, bidirectional interaction between the innovation and the context, which help shape the innovation to ‘fit’ the context.
- In Bosnia and Herzegovina, a holistic approach—comprising multifaceted and simultaneous interventions at multiple levels of the health system—reduced ‘policy resistance’ and enhanced the adoption and diffusion of the PHC reforms.

Introduction

Strengthening primary health care (PHC) in the member states is a priority for the World Health Organization (WHO) (WHO 2003a). The *World Health Report 2003* argues that health systems led by PHC may be better positioned to confront key contemporary challenges faced by health systems, such as the global health workforce crisis, inadequate health information, lack of financial resources, inequities which persist, and difficulties encountered in implementing pro-equity health policies in a pluralistic environment (WHO 2003b).

A number of systematic reviews, cross-national and country-level studies have demonstrated benefits of PHC (Engstrom *et al.* 2001; Atun 2004; Health Council of the Netherlands 2004; Starfield *et al.* 2005). Health systems that are PHC centred have better health outcomes (as measured by all-cause mortality, premature mortality and morbidity) after controlling for determinants of population health at the macro-level (GDP per capita, total physicians per 1000 population, percentage of elderly) and micro-level (average number of ambulatory care visits, per capita income, alcohol and tobacco consumption) (Macinko *et al.* 2003). Increased availability of PHC is associated with higher patient satisfaction. Health systems with strong primary care orientation (as opposed to those which emphasize hospital or narrow specialist-led care) tend to be more pro-poor, more accessible and have more equitable distribution of health outcomes. Allocating a larger proportion of health system funds to PHC, as compared with those allocated to hospital care, enhances equity. The majority of studies, which compared services delivered by PHC physicians (family physicians) with narrow specialists, showed no adverse effect on the quality of care or patient outcomes, but instead lower service delivery costs and increased patient

satisfaction were documented (Atun 2004). Health systems with strong PHC tend to be more efficient and effective, with lower demand for specialist-led hospital care, less hospitalization and diminished risk of inappropriate investigations or interventions (Roberts and Mays 1998).

Given the evidence base on the benefits of PHC-centred health systems, many countries and multilateral agencies, such as WHO and the World Bank, are supporting initiatives to strengthen PHC: including the countries of eastern Europe and central Asia (ECA)—for example Armenia (Atun *et al.* 2005f), Estonia (Koppel *et al.* 2003; Atun 2005), the Former Yugoslav Republic of Macedonia (Nordyke and Peabody 2002), Georgia (Gotsadze *et al.* 2005), Kyrgyz Republic (Atun *et al.* 2005e), Moldova (Atun *et al.* 2005g), Poland (Chawla *et al.* 2004), the Russian Federation (Sheiman 1995; Rese *et al.* 2005) and Slovenia (Svab 1995).

The introduction of PHC in the ECA countries has been particularly challenging as they faced a rapid transition from command to market economies with financial instability, widening of socio-economic inequalities, decline in expenditure of social sectors (including health), dramatic falls in life expectancy (Shkolnikov *et al.* 2001) and re-emergence of communicable diseases. Moreover, the organizational structures, financing systems and hospital centredness of the health systems in these countries have made it particularly challenging to introduce PHC reforms (Atun *et al.* 2005b). Some countries in the Balkans and the Caucasus Regions experienced bitter ethnic conflicts that destroyed much of the health systems infrastructure and made the introduction of PHC reforms even more challenging. Prior to the transition, countries in ECA had well-developed health care networks, but during the transition they experienced substantial reduction in health system financing and investment in the health system infrastructure, and

Box 1 Civil war in Bosnia and Herzegovina

Between 1992 and 1995, 3 years of civil war caused widespread physical damage and had a devastating effect on Bosnia and Herzegovina (BiH). Over 10% of the population was killed or wounded and over two million people — nearly half the pre-war population — were forced from or chose to leave their homes and became refugees, either abroad or displaced internally within BiH. With these population movements, community- and family-based social networks were seriously disrupted. Two-thirds of homes were damaged, with one-fifth totally destroyed. An estimated 30–40% of hospitals and 70% of schools were destroyed or severely damaged, and 30% of health care professionals and a similar share of teachers were lost to death or emigration. The economic situation deteriorated rapidly during the war. The economy collapsed and the per capita GDP fell five-fold, from US\$2429 in 1990 to US\$456 in 1995 (World Bank 2000).

In November 1995, following the civil war, a peace agreement, the Dayton Accord, was negotiated. The Accord acknowledged the bitter ethnic divides that had led to war by establishing a government structure with a weak central state in which the ethnically based 'entities' retained political, military and economic authority. The Accord also provided for a strong international policy and military presence and an international overseer — the Office of the High Representative.

Under the 1995 Dayton Accord, four levels of government were established in the Federation of Bosnia and Herzegovina (FBiH) and three in Republika Srpska (RS): at the highest level, the state of BiH (the state); at the next level, two constituent political entities (FBiH and RS) covering 51% and 49% of the land area of Bosnia and Herzegovina, respectively; and FBiH was divided into 10 cantons, which in turn were divided into municipalities. In RS, no cantons were established and local government was assumed directly by municipalities. In addition, Brcko, with three municipalities, was designated as a District.

Box 2 The BiH health system prior to the civil war

Prior to the 1992 war, BiH, a constituent member of the former Federal Socialist Republic of Yugoslavia, had a well-developed health care system comprising a large network of hospitals, public health facilities and a network of PHC centres comprising *dom zdravljas* (DZs), doctors' offices for ambulatory PHC services, and first aid and emergency service units. The population health indicators were comparable to the countries in Europe.

Although the health systems in former Yugoslavia shared similarities with those in the former Soviet Union (FSU) countries (publicly financed and provided by salaried public employees, with free health care at the point of delivery), differences existed. The Soviet Semashko model was centrally managed with a large network of secondary care institutions and a fragmented PHC level — comprising a tripartite system of adult, children and women's polyclinics, and specialized dispensaries. In contrast, former Yugoslav states had substantial autonomy in the organization of their respective health systems — with a strong PHC level and involvement of local government.

In BiH, each municipality had its health centre (a DZ), which coordinated a network of smaller PHC community facilities (DZ outposts). There were 109 DZs, located in the main cities or towns — each covering a commune of 30 000 to 50 000 inhabitants — with clinics in smaller communes and villages. The DZs coordinated 900 doctors' offices, staffed by a doctor and a few nurses, which provided basic first-line services to local populations. Within the DZ, PHC was divided into seven distinct functions: (a) general practice, (b) occupational medicine, (c) pre-school paediatrics, (d) school paediatrics, (e) gynaecology and obstetrics, (f) laboratory/X-ray, and (g) hygiene and epidemiology. The PHC system was coordinated by the Ministry of Health and Social Affairs, and included health clinics that served special groups such as the police and military personnel and large companies, which organized their own health services.

emigration of health professionals to neighbouring countries. One such country was Bosnia and Herzegovina (BiH), which also experienced bitter civil war lasting from 1992 to 1995 (Box 1).

Prior to the war, BiH had a well-developed PHC network based on municipality health centres (*dom zdravljas*, DZ) staffed by narrow specialists, which coordinated consultation centres for doctors and nurses; but following the war, economic collapse and destruction meant that these networks could no longer be sustained (Box 2). With the end to the war in 1995, the BiH government, with support from international organizations and multilateral agencies such as the World Bank, began a health reform programme to restructure its health system. The reforms (summarized in Box 3) aimed to develop a new model of PHC centred on family medicine. In 2001, a new model of PHC, piloted in both entities (the Federation of Bosnia and Herzegovina [FBiH] and Republika Srpska [RS]), proposed to simultaneously introduce changes in the health systems elements: namely, organizational structure and stewardship, financing, provider payment systems, service provision and resource generation.

Changes to the stewardship function and organizational structures included the creation of a Federal Ministry of Health with decentralization of health services to entity (in the case of the RS) and canton levels (with 10 cantons in FBiH, each with a minister of health). At operational level, family medicine was established as a medical specialty and introduced into municipality health centres as gatekeepers and providers of PHC services. Autonomous family medicine teams (comprising a family physician and one or two family medicine nurses) were created. These could contract directly with the municipality health centres or through them with the newly created health insurance organizations (one in RS and one in each of the 10 cantons of the FBiH) to provide health care services: a shift from salaried employment. At PHC level, users were given the right to choose their family physicians.

Budget funding was replaced with a mixed financing system, with the introduction of health insurance to complement budget transfers from the state and local government. Provider payment systems for PHC changed from budgets to simple per capita.

Box 3 Health reforms in BiH

The post-war reconstruction and development programmes in both Entities, supported by the World Bank and other agencies, aimed to develop a Basic Health Programme comprising: (1) a primary health care based on the family medicine concept; (2) a shift from the pre-war emphasis on large hospitals and polyclinics towards more efficient use of outpatient facilities and home-based care; and (3) a greater emphasis on cost-effective public health, disease prevention and control.

In the Federation of BiH, the Health Care Law (Federation of Bosnia and Herzegovina 1997a) and the Health Insurance Law (Federation of Bosnia and Herzegovina 1997b), along with the related by-laws and regulations, divided the responsibilities of the Federation and Cantonal levels. The Federation level was given the authority to formulate policy and pass laws, and the Cantonal level the authority to formulate local policies, implement laws, and be responsible for financing and provision of health services.

The Strategic Health System Plan for the Federation of Bosnia and Herzegovina (Federation of Bosnia and Herzegovina 1998) articulated the objectives for health system reform. In Republika Srpska, the 'Strategic Plan for Health System Reform and Reconstruction, 1997–2000' (Republika Srpska 1997) identified key structural problems with the RS health system and articulated the need for health reforms whose objectives were stated in the 'Health Policy Targets and Measures in Republic of Srpska by the Year 2020' (Republika Srpska 1999a) and actions identified in the Law on Health Care (Republika Srpska 1999b). Collectively, these reforms aimed to: (1) develop a sustainable and affordable health system; (2) introduce universal coverage for a 'basic package' of services to achieve equity and solidarity; (3) improve efficiency by better use of available resources and allocation of these to priorities through effective management; (4) increase the satisfaction of users and health professionals (higher quality health care with transparency and accountability); and (5) create pluralism and ownership by introducing a public/private mix.

Changes in service provision were driven by the introduction of service contracts between health insurance organizations and PHC providers, which defined the scope of services delivered, and specified use of evidence-based guidelines (developed locally with international technical assistance and adopted in law) set the quality standards, which were used for the accreditation of PHC providers, and prescribed the essential equipment used to deliver services. The family medicine model extended the scope of services delivered in the PHC setting by family physicians and family medicine nurses to include health education, promotion, disease prevention interventions, expanded diagnostic and curative services—enabling the family medicine team to act as a gate keeper while providing more comprehensive and continuous health care services to its registered population.

Key changes in resource generation function included: (1) the establishment of specialist training programmes for family physicians and nurses as well as family medicine training for undergraduate medical students, and (2) development of management training programmes for senior policy makers, and directors who worked in hospitals and at PHC level (Atun *et al.* 2005c).

Despite a very challenging post-war context, resource constraints and professional resistance, within 4 years, PHC reforms were scaled up to cover 25% of the population in FBiH (Atun *et al.* 2005c).

In this study, we examine the introduction of PHC reforms in BiH through an innovation lens, drawing on the scholarly management literature on the uptake and diffusion of innovations within health systems (Plsek and Greenhalgh 2001; Greenhalgh *et al.* 2004; Atun *et al.* 2005a,d). The PHC reforms in BiH can be considered to be a complex innovation; they include multiple elements of organizational and process innovations (changes in the organizational structure, financing, payment systems, service delivery and resource generation). We examine the factors that influence the uptake and diffusion of this complex health innovation, as perceived by key stakeholders.

Factors influencing the diffusion of innovations within complex systems have been described (Plsek and Greenhalgh 2001) and include presence of opinion leaders (Rogers 1995; Locock *et al.* 2001; Fitzgerald *et al.* 2002), social networks (Rogers 1995; Valente 1995; West *et al.* 1999), the organization's absorptive capacity for new knowledge (Barnsley *et al.* 1998; Ferlie *et al.* 2001) and a 'receptive context' (Pettigrew *et al.* 1992). Presence of shared goals for improvement (Bradley *et al.* 2001), availability of training and information support systems and structures to facilitate learning and sharing (Shortell *et al.* 1998), and a culture characterized by communication, involvement, creativity and learning by experimentation (Ham *et al.* 2002) have been found to positively encourage adoption and diffusion of innovations. In the European context, introduction of PHC reforms have been examined from a change management perspective (Ferlie *et al.* 2001; Fitzgerald *et al.* 2002; Fitzgerald *et al.* 2003). Although studies have explored diffusion of innovations in the health sector, we are not aware of any studies that have empirically examined PHC reforms in transition countries from an innovation diffusion perspective, or any studies that have explored the introduction and diffusion of PHC reforms in the Bosnian context. Hence, our study, examining PHC reforms in a transition country from an innovation lens, is novel and provides empirical evidence on PHC reforms in BiH—a particularly complex post-war setting.

Methods

We used a proprietary framework for our analysis, which was developed over a period of 3 years (2003–05), and enables simultaneous and holistic analysis of the context, the innovation and the adopters, and the interactions between them (Figure 1). This is particularly relevant in health systems—which are complex adaptive systems—in which a collection of individual agents (individuals and organizations) have the freedom to act in ways that are not predictable. The actions of

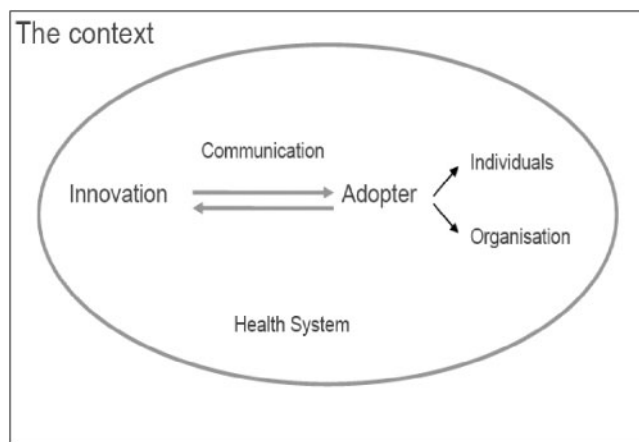


Figure 1 A framework for analysing the diffusion of complex innovations in health systems

these individuals are interconnected—action by one agent changes the context for other agents. The interaction of the innovation with the context influences context responsiveness, which, in turn, influences the adaptation, translation and assimilation of the innovation. This interaction and unpredictability of system responses to interventions results in non-linearity in the diffusion process (Grol 2001) and may indeed lead to unintended consequences or ‘policy resistance’ (Sterman 1994).

The development of this analytical framework was informed by theoretical propositions and empirical studies in innovation studies (Baldrige and Burnham 1975; Downs and Mohr 1976; Tornatzky and Klein 1982; Van de Ven 1986; Damanpour 1987; Meyer and Goes 1988; Moore and Benbasat 1991; Wolfe 1994; Abrahamson and Rosenkopf 1997; Van de Ven *et al.* 1999; Rogers 2003). When developing our framework, we paid particular attention to studies which explored innovations in the health sector (Coleman *et al.* 1966; Kaluzny 1974; Kimberly and Evanisko 1981; Ferlie and Pettigrew 1996; Locock *et al.* 2001; Plsek and Greenhalgh 2001; Denis *et al.* 2002; Foy *et al.* 2002; Fitzgerald *et al.* 2002; Greenhalgh *et al.* 2004; Ferlie *et al.* 2005; Fitzgerald *et al.* 2006). The framework integrates the four dimensions of the diffusion process that influence the rate and pattern of adoption of an innovation: the nature of the innovation and its attributes; the adopters (or innovators) and their characteristics, both individuals and groups/organizations; the communication process; the context within which innovation diffusion takes place; and the interactions and interconnections between the innovation, adopters and the context. This analytical framework has been applied in empirical studies undertaken in several ECA countries.

In this study, the context refers to the political, economic, institutional, social and cultural environment in both entities of BiH; the innovation refers to the multifaceted, family-medicine-centred PHC reforms; and the adopter to the PHC organizations and health professionals who adopt and use the innovation. In the case of BiH, the communication process involved a planned dissemination of the model by the

ministries of health and the multilateral agencies such as the World Bank and WHO.

The study was conducted in 2004–05 over 18 months and involved both qualitative and quantitative methods of inquiry and both primary and secondary research, which informed each other and enabled triangulation of findings. The findings of the quantitative elements of the study are reported elsewhere (Atun *et al.* 2005b,c). We adopted an inductive approach in the qualitative element of our research, which involved face-to-face interviews of key informants and focus group discussions. Qualitative research with an inductive approach was appropriate to our study, which aimed to explore how the PHC reforms were implemented, the factors influencing the adoption and diffusion of the innovation, but also to interpret and structure the meanings attached to the innovation and the diffusion process derived from the perceptions of the informants (Bowling 2002).

We used purposive (Lincoln and Guba 1985), or theoretical (Glaser and Strauss 1967), sampling, with snowballing (contact building once in the field), over three stages to identify, for interview, a multi-level, multi-stakeholder sample of 58 key informants from key stakeholders involved in the PHC reforms to explore a range and nature of perceptions—including six policy makers, nine clinicians, 11 family physicians, five nurses, 18 managers and nine patients selected from the pilot regions where the PHC programme was being implemented (Tables 1 and 2). All the informants approached agreed to be interviewed.

In the first stage of interviews, we used a semi-structured questionnaire, developed with local counterparts, piloted and then iteratively refined before application. In the second and third stages we used a topic guide to allow more in-depth exploration of key themes emerging from the first stage of interviews. We explored: (1) the nature of the innovation as perceived by the key informants; (2) the perceived characteristics of the innovation that facilitate the diffusion process, such as the relative advantage, compatibility, simplicity, trialability and observability of the innovation (Rogers 1995); (3) the communication process between the ‘innovators’ and adopters; and (4) contextual, individual and organizational factors, as perceived by the key informants, which hindered or enabled the uptake and diffusion of the innovations.

The interviews were conducted in BiH by UK-based researchers in English or in local languages; consecutive interpretation was employed by using an experienced interpreter with good knowledge of health services. None of the researchers were involved in implementation of the reforms and hence were able to undertake an independent evaluation. The interviews were tape-recorded and verbatim transcripts produced and translated into English. A grounded theory method of analysis was adopted allowing the results to be ‘grounded’ to the data collected (Glaser and Strauss 1967; Strauss and Corbin 1998). The transcripts were analysed independently by UK-based researchers to enhance robustness of analysis. The data emerging from the first stage of interviews were analysed to identify key emerging themes. These were inductively discussed by the research team and local research counterparts and checked against documentary evidence for triangulation,

Table 1 Geographic distribution of key informants interviewed

No. of informants	Republika Srpska (RS)	Federation of Bosnia & Herzegovina (FBiH)	Bosnia & Herzegovina (BiH) Total
Visit 1	9	10	19
Visit 2	18	21	39
Total	27	31	58

Table 2 Characteristics of key informants interviewed

No. and category of informants	Republika Srpska (RS)	Federation of Bosnia & Herzegovina (FBiH)	Bosnia & Herzegovina (BiH) Total
Clinicians	6	3	9
Policy makers	2	4	6
Managers/administrators	9	9	18
Family medicine doctors	5	6	11
Family medicine nurses	1	4	5
Patients	4	5	9
Total	27	31	58

and informed subsequent stages of analysis. These themes were further explored in depth using a refined and shortened topic guide (Bryman 1998). Similarly, data from the second stage were analysed to refine the topic guide for the interviews in the third stage. A coding framework was agreed for the analysis and the emerging themes were grouped under the three main categories of the analytical framework, namely innovation, adopters and the context. No further interviews were taken once saturation point was reached and no new data were emerging from the interviews.

We kept a fieldwork diary, to keep a chronological and progress record of the research, as well as observational field notes of the visited sites. This helped enrich our understanding of the functioning of the project's environment.

Results

Innovation characteristics: the benefits of the family medicine model as perceived by the key stakeholders

Most of the respondents interviewed perceived family medicine to be beneficial to users, health professionals working at PHC level and the health system. Key perceived advantages of the new family medicine model were identified as greater emphasis on holistic and user-centric health care with expanded services, especially health promotion and prevention. Family medicine was seen as a "more human, friendly health care model", with a "holistic approach to the population's health needs", which gave the users simultaneously more "choice" and "responsibility with health decisions". The family orientation of the model allowed "personal problems to be seen in a broader context".

Perceived benefits for the users included "improved access to the system", "improved doctor-patient relationship" and "an increased individual responsibility for the health professionals towards the user", and "respect for one's time".

For the health professionals, as many informants explained, the family medicine model and the accompanying organizational/financing changes led to a "more meritocratic payment system" with the introduction of "performance related pay", which created "an opportunity for promotion of those who perform well". Whereas, for the health system, the perceived benefits related to improved productivity and equity, as family medicine was seen to be "more rational and cost-effective", introduced "gate keeping" to reduce unnecessary hospitalizations, and increased accessibility to health services which improved equity in the system.

"User choice"

The ability of users to choose their doctor was seen as a revolution, which strengthened user power and helped drive the reforms. The perspective of a Ministry of Health (MoH) official resonated with that of other policy makers, clinicians, managers and patients:

"If patients are not satisfied with the service, or the doctor's knowledge, they can change their doctor after one year. Many doctors, who are not competent, will lose patients and subsequently money." (Federal MoH official)

"Economic benefits"

The family medicine model was perceived to be appropriate to the current political and socio-economic situation, and the economic benefits of the new model to the wider macro-environment were acknowledged, as illustrated by a General Practitioner (GP):

"Our political structures have backed the model, as we are now a poor country and poor countries do not have money to waste. So, the system must become rational and optimal, and the family medicine model is more efficient without duplications." (GP)

The adopters

The assimilation and implementation of the new model relied on the consensus of a diverse group of adopters. The changes brought by the reforms were aligned with the expectations of the adopters: this helped the adoption and diffusion process. Many individual adopters noted that their expectations as professionals had changed along with those of the population—in that they wanted to be valued as professionals, improve their skills, be part of a more meritocratic system and have a better relationship with users, who they expected to have a greater involvement in the health production process.

The new family medicine model and the service model it brought had a major impact on (a) professional identity, (b) inter-professional relationships and (c) organizational routines.

(a) Impact of the new service model on professional identity

“Transforming roles from a referral agent to a patient’s advocate”

The family medicine model transformed the role and identity of the doctors working at PHC level, as explained by a clinician who was also a senior academic:

“In the old system there was General Practice without really any practice. The GP in the previous system only used to refer patients to the other specialists. But now we try these doctors in family medicine, who with the new education provided can solve over 80% of the clinical cases. In practice, we now have new specialists in family medicine, with new knowledge and skills.” (Clinician/Professor in Medical Department)

This evolution of the role and identity empowered family physicians and motivated them to be actively involved in the adoption and diffusion of the new mode. Doctors sought to improve their knowledge and skills and further develop their competencies—which in turn helped them “feel more valuable”, as they could now provide quality service to their patients. This common view was articulated by managers and clinicians alike:

“GPs in the old system had practically a similar role to that of a railway traffic controller. They used to simply divert patients to specialists, who were in reality the ones that provided treatment services to patients. In that way we were just by-passing GPs.” (Cantonal MoH official)

“In the new model, the doctor is not someone who just fills in prescriptions, or just refers patients to the hospital.” (Federal MoH official)

“In the past, it was more like a routine work and I was giving less of myself as a doctor, I didn’t need that much knowledge, which I really do need now.” (Family medicine doctor)

(b) Impact on inter-professional relationships

“Empowering the health professionals”

Respondents widely shared the view that the new family medicine model afforded more responsibility to the health professionals working at PHC level, increased their self-esteem, morale and confidence, stimulated improved performance, but also enabled them to exercise more control over their professional duties.

“Now doctors know that their destiny is in their hands.” (Cantonal MoH official)

“In the old system nurses did most of the administrative tasks and there were just a few clinical services provided directly to the patients. Now...they talk to patients, seek to identify problems, and perform clinical procedures.” (PCU official)

The PHC reforms offered incentives—such as new career opportunities and financial rewards—which motivated health professionals to be involved in the new model:

“Doctors now have this Family Medicine department and they now feel better if they know that there is the

possibility one day to become a professor in the department, which means that being a family medicine doctor has become a profession.” (GP)

“We hope that we will have better salaries and that in this way more young doctors will be stimulated to get involved and specialised in family medicine.” (Family physician)

“Broadening the skill base”

The family medicine model expanded the knowledge and skill base of health professionals and increased work efficiency while boosting confidence—as one nurse remarked:

“With the new model we had to upgrade our knowledge and improve our clinical and communication skills. With the new model we have a completely new type of nurse: more advanced, more confident and efficient.” (Family medicine nurse)

These sentiments were echoed by doctors:

“Not to mention the skills that we have gained; we had the knowledge, but we lacked some practical and communication skills. Now we have made great improvement and get great satisfaction from managing our patients.” (Family physician)

“Heightened inter-professional tensions”

While improving inter-professional relations of workers at PHC level, the changes heightened professional tensions between family physicians and narrow specialists. In particular, some dom zdravlja directors and narrow specialists expressed concerns that broadening the responsibilities of family medicine specialists may adversely affect quality of services:

“The family medicine model deals with a very wide area of medical knowledge and I am afraid that not many of my peers will be able to cope with this demand and manage to perform accordingly.” (DZ director)

“It is reasonable to believe that one man cannot know everything; there should be teams with skills.” (Narrow specialist)

(c) Change in organizational routines

“Teamwork”

Throughout the discourse with PHC providers and managers on care provision, notions of changing responsibility, empowerment, enhanced autonomy and increased inter-professional collaboration ran deep. Many of the respondents welcomed certain advantages they associated with the family medicine, especially improved communication between health professionals, the promotion of cooperation and team development, which in turn helped to enhance quality and efficiency of services:

“Teamwork is also one of the greatest things; now...the doctor can just concentrate on the medical work, which helps the effectiveness and efficiency of the team’s work.” (Federal MoH official)

“There is a big change in the functioning of the teams; we now work as real teams, all of us: doctors, nurses and patients. There is good co-operation and that helps to deliver better quality services.” (Family medicine nurse)

"The communication between the doctor and the nurse is much better with the family medicine model; we are now working as a team. The relationship is even better when it comes to patients." (Family medicine nurse)

Empowering the users led to their greater engagement in the care delivery process, improved accessibility and care seeking behaviour, as explained by clinicians and managers:

"We have learned new communication techniques to use when we are with the patients, to show a friendlier and accessible face, and the patients are really thrilled about that." (Family medicine doctor)

"After providing some information to the people, you can see how actually the questions [about what they want] are becoming more precise and come to the point." (PCU/MoH)

"Concerns about changing organizational routines"

Many informants shared the view that organizations and individuals resisted adoption of the new model and the change in organizational routines it brought because of "reluctance to adopt an innovation", "inadequate information", "habit" or the "shock of change". Poor communication fed these fears and concerns:

"Patients are still not ready and are reluctant about the new reforms and the new doctors. They still don't fully accept the nurse as an equal member of the family medicine team, and still have not got rid of the old habit of visiting many clinicians – they don't like to be limited to just one doctor." (Family physician)

"The actual problem was that they [policy makers] didn't spread the word to their colleagues. So, just we, the early adopters of family medicine, were the promoters of the new model." (Family medicine doctor)

Many respondents felt that the innovation had been "imposed" and their "fear of the unknown" created a barrier to adoption:

"People didn't accept it, because they thought it was being imposed. People are afraid of changes and new things." (Family medicine nurse)

"People are not well-informed. They fear the unknown and don't want changes." (GP)

Others felt that a "threat" to "job security" and "existing status", the loss of "power base" and diminished "authority" were the main reasons for resistance from clinicians and managers – a resistance which was unpredictable or concealed:

"We had resistance, people were sceptical, especially the management of DZ, as in the new system they will lose the authority and the money which they manage today." (Cantonal MoH official)

"...people from the secondary and tertiary levels fear that as the PHC level strengthens, they will probably lose their job...they were the rulers in the system and don't want to lose that position and power." (GP)

"Resistance is often invisible, but somewhere it exists, hidden behind corners." (GP)

"Suddenly we were exposed to the fire coming from the management board of that institution; tremendous resistance was coming from the specialists working at PHC and secondary levels. They just don't understand what is going on in the system and they are protecting their vested interests." (PCU official)

"Misunderstanding" or "lack of understanding" of the scope, objectives and values of the family medicine reforms and changing organizational routines led to "division of cultures" among professional groups in the health sector who were not "...speaking the same language". This led to further heightened tensions between professionals and interfered with discharging of organizational routines.

"The government has tied hands and they are not in a position to do more, because they have a certain budget... This they detest and blame on family physicians... this is the kind of misunderstanding between the doctors at the PHC level and the government." (Clinician)

"The communication between the faculty [of medicine], the ministry and the [health insurance] fund is not very good; it appears that they are all detached [from each other]." (Public Health Institute official)

"Our previous director didn't have an understanding of our efforts and the scope of the reform. Many of our colleagues were also lacking a similar understanding, mainly people working in hospitals, who didn't know what our job was about." (Family medicine doctor)

The context

The reform process and the assimilation of the innovation were influenced by the wider context and the actors within it. In BiH, the war and its consequences resulted in an inherently complex setting for the reforms and the assimilation of the family medicine model by PHC organizations.

The assimilation process

The immaturity of the political system and the precarious transition from the socialist past to a democratic constitution was noted to be an important factor which influenced adoption of the innovation:

"Family medicine reform is very complex because it is very difficult to have complete agreement of all the actors involved in the system." (Federal MoH official)

The history, traditions and previous experience of the country shaped future expectations and influenced the adaptation of the innovation as it went through the translation process:

"When we refer to provision of gynaecological services in this country, we need to bear in mind the tradition in that field. So if we insist on women going to family medicine doctors for gynaecological clinical issues, we may have some negative results. The same also applies to children." (Family physician)

"We adjusted the model to local need: that of the patients. You cannot apply exactly the same model everywhere; you have to adjust

it to people you are working with, the area and the needs of the local population.” (DZ Director)

The introduction of the family medicine model in one municipality (Laktasi) was cited as a creative example when the PHC reforms and the family medicine model were “adjusted to meet the needs of the local context”, which made it more attractive to the specialists, thereby reducing resistance, improving ownership and accelerating adoption:

“The creativity and abilities of the director in the particular DZ managed to find a solution to this problem. So now in Laktasi the system has been adapted to the local needs.” (Narrow specialist)

Referring to the perception by some that the family medicine model was “imposed” and not adequately negotiated, and hence met resistance from some specialists (such as gynaecologists and paediatricians working at PHC level), a narrow specialist remarked:

“We are an immature society: a vulnerable society. Democracy here has a different meaning to that in the UK or other European countries.” (Narrow specialist)

Deficiencies in administrative and governance systems, and inadequate inter-cantonal and inter-entity cooperation, were identified as reasons for varied interpretations and incomplete diffusion of the PHC reforms:

“The Dayton agreement created a country with two entities and 10 cantons in one of the entities. Health policy was delegated to cantonal level in the Federation. It is difficult to develop policies which can embrace all these peculiarities.” (Federal MoH official)

“...the administrative system in the Federation is very complicated. There are 10 Cantons and 11 different [health insurance] Institutions and each follows different practices.” (Health insurance fund director)

Cultural factors and varying attitudes to change in different parts of BiH also influenced the assimilation process as well as the speed of adoption and diffusion:

“If we were Germans or Japanese, it would probably have been done sooner, as people from these countries always stick to regulations; it is part of their culture. But here we allow people to think, to use their heads and their hearts, and therefore, the process takes more time and requires patience.” (GP)

“...in two parts of RS, the western and the eastern, there are huge differences in mentality. The failure we encountered at the very beginning of introducing the new model was in the south-eastern part of RS and it was due to the mentality of the people there. It is really hard to promote new ideas and implement something new in an environment where people still live in the 17th or 18th century. They don't recognize the new age, the new things that were promoted in Western countries 50 or 100 years ago.” (PCU official)

Discussion

In the BiH context, we find that the introduction of the family-medicine-centred PHC reforms was influenced by contextual factors and the perceptions of the adopters about the benefits of the innovation. In BiH, adoption and diffusion of PHC reforms was enhanced by communicating the benefits of the innovation, understanding adopter characteristics and aligning their expectations with the benefits of the innovation.

While many transition countries struggle with the introduction of family-medicine-centred PHC reforms (Atun *et al.* 2005b), in spite of a very challenging post-conflict environment the PHC reforms in BiH have been implemented to cover 25% of the country within 4 years of introduction. To further scale up and sustain the reforms many challenges still remain to be addressed: amongst others, developing human resources for the family medicine team, expanding services delivered by the family medicine team, creating a robust referral and counter-referral system, establishing monitoring and evaluation systems, harmonizing various approaches to care delivery adopted by different cantons, and addressing inequities due to different income levels from health insurance revenues in different cantons (Atun *et al.* 2005c).

An important factor influencing the adoption of this complex innovation in BiH was the perceived benefits of the innovation; benefits which accrued to the users, family physicians, nurses and policy makers. This positive perception of the benefits helped adoption of the reforms by PHC professionals and the users, and should be built upon as BiH prepares to widely scale-up PHC reforms and successfully roll-out to the rest of the country.

We found that the alignment of user and clinician expectations (for example, in bringing about change, greater empowerment, enhanced teamwork, upgrading of skills, creation of a more meritocratic environment) with the changes promised as a result of family medicine reforms had created a ‘receptive context’ (Pettigrew *et al.* 1992) for uptake and diffusion of the innovation, and encouraged assimilation. However, in some cases – as with narrow specialists – the differing nature of expectations and poor understanding of the reform objectives adversely influenced this receptive context.

Communication and interaction between the innovators and the adopters were found to be critically important. In the BiH context, this appeared to be the Achilles’ heel of the PHC reforms as many respondents identified that inadequate communication of the reforms created a sense of uncertainty about the future and a ‘fear of the unknown’, which in turn created resistance and hindered adoption by some PHC organizations.

Context matters. Innovations, in the process of assimilation into the system, are adapted in the uptake and diffusion stages, and translated to a form that is more aligned with the contextual needs. This translation is critical to wider diffusion. Adjustment of a complex health innovation to the local context, as happened in one of the municipalities in BiH, makes it more attractive to the adopters, reducing resistance, improving ownership and accelerating adoption and diffusion.

Our study has certain limitations. We adopted qualitative methods and used theoretical rather than random sampling. To overcome these limitations, we maintained a systematic approach to our research rigour at every stage of the study – in design, sampling, analysis and interpretation – with independent reflexive thematic analysis which allowed triangulation between team members (Mays and Pope 1995). Our sample, though not statistically representative, was theoretically informed, relevant to the research questions and hence appropriate to our research. To ensure rigour we sampled from different levels: policy level, middle management, senior and operational level clinicians, family physicians, nurses and patients (Ham *et al.* 2002).

The researchers were conscious of the trans-national nature of this study and the difficulties of language, distance and culture it presented. The reflexive nature of qualitative research allowed this to be explicitly recognized and discussed by the research team. Joint analysis of data and interpretation of findings through iterative triangulation allowed us to mitigate the challenges posed by the trans-national nature of the study (Bryman 1998).

Our results may have important policy implications. In the case of family medicine reforms, policies or the innovation are not simply disseminated, but rather assimilated into the health system. The introduction and implementation of a new family medicine model not only implies a change in the way services are provided but goes deeper than that; comprising multifaceted and simultaneous interventions at multiple levels of the health system that involve multiple stakeholders. Hence, family-medicine-centred reforms present a complex innovation – involving organizational, financial, clinical and relational changes – within a complex adaptive system. When introducing such an innovation in a complex adaptive system, the risks of failure are substantial. To mitigate these risks, it is important for policy makers to understand the nature of the innovation, the perceived benefits of the innovation, adopter characteristics and contextual factors which may influence the assimilation, adoption and diffusion process. Policy makers also need to understand that in complex systems, interventions may have unintended consequences.

As contextual and health system factors influence the translation of policies into action and the diffusion of innovations, a broader and more detailed analysis of the context and health system elements than that usually done in PHC reforms can lead to better prediction of the effects of a specific policy and promote sustainability. A simplistic situational analysis and subsequent attempt to introduce an innovation without appropriate adaptation to the context may result in ‘policy resistance’, as the most important causes of resistance to the uptake and assimilation of innovations are overlooked (Sterman 1994; Sterman 2001). One way to reduce this policy resistance is to adopt ‘systems thinking’, which requires a detailed analysis of the context and devising effective responses (Sterman 2000; Sterman 2001). Another way, as the BiH case demonstrates, is to create an enabling environment, to provide flexibility to adopters to ensure that adaptation of the innovation during uptake and diffusion is aligned with the contextual needs.

References

- Abrahamson E, Rosenkopf L. 1997. Social network effects on the extent of innovation diffusion: a computer simulation. *Organization Science* **8**: 309.
- Atun RA. 2004. What are the advantages and disadvantages of restructuring a health care system to be more focused on primary care services? Copenhagen: WHO Regional Office for Europe's Health Evidence Network (HEN). Available online at: [<http://www.euro.who.int/document/e82997.pdf>].
- Atun RA. 2005. *Evaluation of the primary health care reforms in Estonia*. Copenhagen: World Health Organization Regional Office for Europe.
- Atun RA, Baeza J, Drobniewski F *et al.* 2005a. Implementing WHO DOTS strategy in the Russian Federation: stakeholder attitudes. *Health Policy* **74**: 122–32.
- Atun RA, Ibragimov A, Ross G *et al.* 2005b. *Review of experience of family medicine in Europe and Central Asia. (In five volumes) Volume I: Executive summary*. World Bank Report No. 32354-ECA. Human Development Sector Unit, Europe and Central Asia Region. Washington, DC: The World Bank.
- Atun RA, Kyrtasis I, Jelic G, Rados-Malicbegovic D. 2005c. *Review of experience of family medicine in Europe and Central Asia. (In five volumes) Volume III: Bosnia case study*. World Bank Report No. 32354-ECA. Human Development Sector Unit, Europe and Central Asia Region. Washington, DC: The World Bank.
- Atun RA, McKee M, Drobniewski F, Coker R. 2005d. Analysis of how health system context influences HIV control: case studies from the Russian Federation. *Bulletin of the World Health Organization* **83**: 730–8.
- Atun RA, Meimanaliev A, Ibragimov A *et al.* 2005e. *Review of experience of family medicine in Europe and Central Asia. (In five volumes) Volume IV: Kyrgyz Republic case study*. World Bank Report No. 32354-ECA. Human Development Sector Unit, Europe and Central Asia Region. Washington DC: The World Bank.
- Atun RA, Ross G, Hivhannasiyan S *et al.* 2005f. *Review of Experience of Family Medicine in Europe and Central Asia. (In five volumes) Volume II: Armenia Case Study*. World Bank Report No. 32354-ECA. Human Development Sector Unit, Europe and Central Asia Region. Washington, DC: The World Bank.
- Atun RA, Turcan L, Berdega V *et al.* 2005g. *Review of experience of family medicine in Europe and Central Asia. (In five volumes) Volume V: Moldova case study*. World Bank Report No. 32354-ECA. Human Development Sector Unit, Europe and Central Asia Region. Washington, DC: The World Bank.
- Baldrige JV, Burnham RA. 1975. Organisational innovation: individual organisational and environmental impacts. *Administrative Sciences Quarterly* **20**: 165–76.
- Barnsley J, Lemieux-Charles L, McKinney MM. 1998. Integrating learning into integrated delivery systems. *Health Care Management Review* **23**: 18–28.
- Bowling A. 2002. *Research methods in health*. Maidenhead: Open University Press.
- Bradley EH, Holmboe ES, Mattern JA *et al.* 2001. A qualitative study of increasing beta-blocker use after myocardial infarction: why do some hospitals succeed? *Journal of the American Medical Association* **285**: 2604–11.
- Bryman A. 1998. *Quantity and quality in social research*. London: Unwin Hyman.
- Chawla M, Berman P, Windak A, Kulis M. 2004. Provision of ambulatory health services in Poland: a case study from Krakow. *Social Science and Medicine* **58**: 227–35.
- Coleman JS, Katz E, Menzel H. 1966. *Medical innovations: a diffusion study*. New York: Bobbs-Merrill.

- Damanpour F. 1987. The adoption of technological, administrative and ancillary innovations: impact of organizational factors. *Journal of Management* **29**: 392–409.
- Denis JL, Hebert Y, Langley A et al. 2002. Explaining diffusion patterns for complex health care innovations. *Health Care Management Review* **27**: 60–73.
- Downs GW, Mohr LB. 1976. Conceptual issues in the study of innovation. *Administrative Science Quarterly* **21**: 700–14.
- Engstrom S, Foldevi M, Borgquist L. 2001. Is general practice effective? A systematic literature review. *Scandinavian Journal of Primary Health Care* **19**: 131–44.
- Federation of Bosnia and Herzegovina. 1997a. *Law on Health Care*. Official Gazette of the Federation of Bosnia and Herzegovina, No. 30/97.
- Federation of Bosnia and Herzegovina. 1997b. *Law on Health Insurance*. Official Gazette of the Federation of Bosnia and Herzegovina, No. 32a/97.
- Federation of Bosnia and Herzegovina. 1998. Strategic health system plan, the Federation of Bosnia and Herzegovina. Sarajevo.
- Ferlie E, Pettigrew A. 1996. Managing through networks: some issues and implications for the NHS. *British Journal of Management* **7**: S81–S99.
- Ferlie E, Gabbay J, Fitzgerald L et al. 2001. Evidence-based medicine and organisational change: an overview of recent qualitative research. In: Ashburner L (ed). *Organisational behaviour and organisational studies in health care: reflections on the future*. Basingstoke: Palgrave.
- Ferlie E, Fitzgerald L, Wood M, Hawkins C. 2005. The (non) diffusion of innovations: the mediating role of professional groups. *Academy of Management Journal* **48**: 117–34.
- Fitzgerald L, Ferlie E, Wood M, Hawkins C. 2002. Interlocking interactions, the diffusion of innovations in health care. *Human Relations* **55**: 1429–49.
- Fitzgerald L, Ferlie E, Hawkins C. 2003. Innovation in healthcare: how does credible evidence influence professionals? *Health and Social Care in the Community* **11**: 219–28.
- Fitzgerald L, Ferlie E, Wood M, Hawkins C. 2006. Evidence into practice? An exploratory analysis of the interpretation of evidence. In: Mark A, Dopson S (eds). *Organisational behaviour in health care: the research agenda*. Basingstoke: Macmillan, pp. 189–206.
- Foy R, MacLennan G, Grimshaw J et al. 2002. Attributes of clinical recommendations that influence change in practice following audit and feedback. *Journal of Clinical Epidemiology* **55**: 717–22.
- Glaser BG, Strauss AL. 1967. *The discovery of grounded theory*. Chicago: Aldine.
- Gotsadze G, Zoidze A, Vasadze O. 2005. Reform strategies in Georgia and their impact on health care provision in rural areas: evidence from a household survey. *Social Science and Medicine* **60**: 809–21.
- Greenhalgh T, Robert G, Macfarlane F et al. 2004. Diffusion of innovations in service organizations: systematic review and recommendations. *Milbank Quarterly* **82**: 581–629.
- Grol R. 2001. Improving the quality of medical care: building bridges among professional pride, payer profit, and patient satisfaction. *Journal of the American Medical Association* **286**: 2578–85.
- Ham C, Kipping R, McLeod H, Meredith P. 2002. *Capacity, culture and leadership: lessons from the experience of improving access to hospital services*. Birmingham: University of Birmingham.
- Health Council of the Netherlands. 2004. *European primary care*. Publication no. 2004/20E. The Hague.
- Kaluzny A. 1974. Innovation of health services: a comparative study of hospitals and health departments. *Milbank Memorial Fund Quarterly – Health and Society* **52**: 51–82.
- Kimberly JR, Evanisko MJ. 1981. Organisational innovation: the influence of individual, organisational and contextual factors on hospital adoption of technological and administrative innovations. *Academy of Management Journal* **24**: 689–713.
- Koppel A, Meiesaar K, Valtonen H et al. 2003. Evaluation of primary health care reform in Estonia. *Social Science and Medicine* **56**: 2461–6.
- Lincoln Y, Guba E. 1985. *Naturalistic inquiry*. New York: Sage.
- Locock L, Dopson S, Chambers D, Gabbay J. 2001. Understanding the role of opinion leaders in improving clinical effectiveness. *Social Science and Medicine* **53**: 745–57.
- Macinko J, Starfield B, Shi L. 2003. The contribution of primary care systems to health outcomes within Organization for Economic Cooperation and Development (OECD) countries, 1970–1998. *Health Services Research* **38**: 831–65.
- Mays N, Pope C. 1995. Rigour and qualitative research. *British Medical Journal* **311**: 109–12.
- Meyer AD, Goes JB. 1988. Organisational assimilation of innovations: a multi-level contextual analysis. *Academy of Management Review* **31**: 897–923.
- Moore GC, Benbasat I. 1991. Development of an instrument to measure the perceived characteristics of adopting an information technology innovation. *Information Systems Research* **2**: 192–222.
- Nordyke RJ, Peabody JW. 2002. Market reforms and public incentives: finding a balance in the Republic of Macedonia. *Social Science and Medicine* **54**: 939–53.
- Pettigrew A, Ferlie E, McKee L. 1992. *Shaping strategic change: making change in large organizations. The case of the National Health Service*. London: Sage.
- Plsek PE, Greenhalgh T. 2001. Complexity science: the challenge of complexity in health care. *British Medical Journal* **323**: 625–8.
- Republika Srpska. 1997. *Strategic Plan for Health System Reform and Reconstruction, 1997–2000*. Banja Luka: Ministry of Health and Social Affairs of the Republika Srpska, with the assistance of the World Health Organization..
- Republika Srpska. 1999a. Health policy targets and measures in the Republic of Srpska by the Year 2020. Available online at: [<http://www.pcuhealth.org/en/docs/cm2020En.pdf>]. Banja Luka: Ministry of Health and Social Welfare, Republic of Srpska.
- Republika Srpska. 1999b. *Law on health care*. Banja Luka: Republika Srpska Ministry of Health and Social Welfare Expert Group (led by Prof. Dr D Jakovljevic).
- Rese A, Balabanova D, Danishevski K et al. 2005. Implementing general practice in Russia: getting beyond the first steps. *British Medical Journal* **331**: 204–7.
- Roberts E, Mays N. 1998. Can primary care and community-based models of emergency care substitute for the hospital accident and emergency (A & E) department? *Health Policy* **44**: 191–214.
- Rogers EM. 1995. *Diffusion of innovations*. New York: Free Press.
- Rogers EM. 2003. *Diffusion of innovations*. New York: Free Press.
- Sheiman I. 1995. New methods of financing and managing health care in the Russian Federation. *Health Policy* **32**: 167–80.
- Shkolnikov V, McKee M, Leon DA. 2001. Changes in life expectancy in Russia in the mid-1990s. *The Lancet* **357**: 917–21.
- Shortell SM, Bennett CL, Byck GR. 1998. Assessing the impact of continuous quality improvement on clinical practice: what will it take to accelerate progress? *Milbank Quarterly* **76**: 593–624.
- Starfield B, Shi L, Macinko J. 2005. Contribution of primary care to health systems and health. *Milbank Quarterly* **83**: 457–502.
- Sterman JD. 1994. Learning in and about complex systems. *System Dynamics Review* **10**: 291–330.

- Sterman JD. 2000. *Business dynamics: systems thinking and modeling for a complex world*. New York: Mc-Graw Hill/Irwin.
- Sterman JD. 2001. Systems dynamic modelling: tools for learning in a complex world. *California Management Review* **43**: 8–25.
- Strauss A, Corbin J. 1998. *Basics of qualitative research techniques and procedures for developing grounded theory*. London: Sage Publications.
- Svab I. 1995. Primary health care reform in Slovenia: first results. *Social Science and Medicine* **41**: 141–4.
- Tornatzky LG, Klein KJ. 1982. Innovation characteristics and innovation adoption implementation: a meta-analysis of findings. *IEEE Transactions on Engineering Management* **29**: 28–45.
- Valente TW. 1995. *Network models of the diffusion of innovation*. Cresskill, NJ: Hampton Press.
- Van de Ven A. 1986. Central problems of the management of innovation. *Management Science* **32**: 590–607.
- Van de Ven AH, Polley DE, Garud R, Venkatarum S. 1999. *The innovation journey*. Oxford: Oxford University Press.
- West E, Barron DN, Dowsett J, Newton JN. 1999. Hierarchies and cliques in the social networks of health care professionals: implications for the design of dissemination strategies. *Social Science and Medicine* **48**: 633–46.
- WHO. 2003a. *Primary health care: a framework for future strategic directions*. Document WHO/MNC/OSD/03.01. Geneva: World Health Organization.
- WHO2003b. *World Health Report 2003 – Shaping the future*. Geneva: World Health Organization.
- Wolfe R. 1994. Organisational innovation: review, critique and suggested research directions. *Journal of Management Studies* **31**: 405–31.
- World Bank. 2000. Memorandum of the President of the International Development Association to the Executive Directors on a Country Assistance Strategy of the World Bank Group for Bosnia and Herzegovina. June 14, 2000. Southeast Europe Country Unit. Europe and Central Asia Region. Report No. 20592 BIH. Washington, DC: The World Bank.