

## HEALTH WORKFORCE WAGES

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This desk-search study intends to be informative for purpose of health workforce planning and forecasting and illustrative by drawing on experiences from countries with developing and developed market economies countries. Five lines of the presented paper are not meant to be exhaustive. The paper starts with description of the usual role of wages in policy actions to balance the supply and demand for health care professionals. The following part of the text explores the effect of wages in the dynamics of health professionals labour market. In view of that, expected wage effects on labour market supply side were discussed. Then, in the focus were wage effects on labour market supply side encompassed with some countries' experiences. Finally, the paper moves to explore the potential of using wages in models for health workforce planning and forecasting, by drawing on mechanisms to overcome obstacles related to quality of health workforce expenditures data and it concludes with brief descriptions of several models for health workforce planning and forecasting.

**Inclusion of wages as a variable may affect the future supply and demand for health professionals.**

*Ono T, Lafortune G, Schoenstein M, 2013*

Among global factors in the last three decades, macroeconomic problems and crises have been important causes of public health sector reform usually by imposing fiscal and structural stabilization measures.

In such situation, financial decisions taken at health sector level (or and other sectors policy) are manifested in changes of working conditions (i.e. decreasing salary and benefits, altering the career prospects, extend of retirement age, changed workload, capital investments and other medical resourcing)<sup>(53)</sup>. In turn, those financial modifications determine the dynamic of components of health professionals labour market including fluctuations of the total workforce stock and flow, skills-mix and distribution, labour relations, motivation and productivity. Those changes variously affect performance dimensions of health system - equity of access to services, service effectiveness, efficiency and responsiveness; and capacity of financial protection

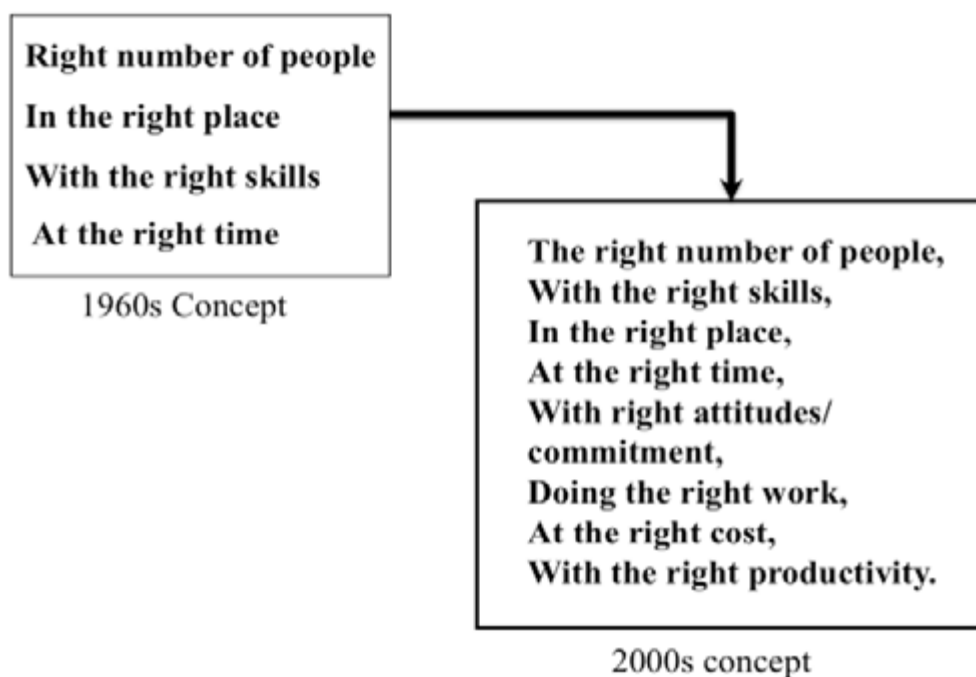
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(53) Buchan J, Wismar M, Glinos IA, Bremner J, editors (2014). Health professional mobility in a changing Europe. New dynamics, mobile individuals and diverse responses. Copenhagen: World Health Organization, European Observatory on Health Systems and Policies.



against the impoverishing effects of ill health<sup>(54)</sup>.

Accordingly, for all health care stakeholders the central issue is how to reduce cost of the health workforce, which generally consumes 60-80% of the annual health expenditure in the large majority of country health systems, while maintaining or improving both the quality of service and the development of the service itself. In case of financial interventions, imbalances in supply and demand for health care professionals characterize health workforce labour market, such as surpluses or shortages. As a response in some countries, the health workforce planning process moved away from traditional health workforce planning with limited attention to costs or efficiency, to strategic one in which staff numbers, mix and deployment are the central focus.



*Changing concepts of HRH planning*

*Source: Hornby P, Santriv Milicevic M. Human resources in health planning. In: Basics of health care system management. Health management guides, readings and references. Training in Health Service management in Serbia, Belgrade: Ministry of Health of the Republic of Serbia, 2011; p.109-127.*

Effects of health workforce surpluses and shortages are not possible to be solved neither by sole year-to-year planning nor isolated health workforce supply- nor by demand side measures. What has become clear is that disorders in supply, demand and mobility of health professionals have to be addressed in a comprehensive approach that includes

(54) Idem

both strategic and tactic actions. For example, health workforce surplus because of decreased demand for health workforce (due to economic measures to control health expenditure growth) are commonly addressed in tactic mode by downsizing, hiring freeze, pay-freeze or/and reduction and demotions, and strategically by early retirement, re-profiling, work sharing, and private sector and migration encouragement.

However, health workforce surplus, because of overproduction (manifested usually in unemployment), can be addressed tactically by extension of service packages or retirement age, and strategically by raising the criteria for training enrolments, reducing training capacities and increasing qualification standards. If not monitored and controlled, after a certain period the effects of those measures may turn the surplus into shortage of health professionals. Shortage of health professionals because of failure at the supply or demand side of labour market is usually addressed by short- or long term actions such as the following: turnover reductions; increase in the remuneration/benefits; hiring temporary employees and retrained transfers; enhancement of workers internal mobility; recruitments and outsourcing; overtime work; reduction of service packages; improvement of reputation and increase of training capacities including institutions, quotas and access to education.

Again, if not planned and evaluated, measures to resolve health workforce shortages can turn into surplus after a while, and may produce shortage in less advantageous work environment (manifested in rural and remote areas to urban moves, public sector to private outflows, primary to hospital care transfer). In addition, it can also distort health professionals choice for profession and career (by going for higher wages and greater prestige i.e. generalists versus specialist occupation).

Strategic health workforce planning and projections has a purpose to rationalize abovementioned health workforce policy options recommended to match expected health workforce supply and requirements with regard to financial feasibility and the overall health plans. It assumes benchmarks to determine the relative success of any policy measure aimed at addressing a projected shortage or surplus at health workforce labour market.

## **The role of wages in determining the supply and demand of workers in the health sector**

*Ono T, Lafortune G, Schoenstein M, 2013*



In economic theory, health care labour market equilibrium occurs when demand and supply for health professionals are equal<sup>(55)</sup>. Demand for health professionals derives from the demand for health services (a proxy measure of health needs), while the health workforce supply side is linked to the market for health professionals training. That equilibrium in health system means at least determining and assuring the provision of right skill-mix of health professionals with available financial resources (see Diagram 1). Number of factors may (de)stabilize the balance between needs, demand and supply of health professionals and skills. For instance, demand for health professionals tends to increase as populations and economies growth, as levels of urbanization, private and population mobility increase, with investment in health facilities and in new health technologies, with unexpected environmental and epidemiological emergencies and growth of private health care sector.

Changes in wages and vacancies are key indicators in health professionals labour market<sup>(56)</sup>. In general, their increase indicates a shortage, and vice versa, when their decrease indicates a surplus of health professionals. In case of health workforce surplus, reductions in wage rates are not always easy to implement, in particular if they were already low, because of workforce resistance. Instead, the response may be to evade or delay wage payments, and by that, encouraging private or other sectors to compete for health professionals. In case of health professionals shortages, if wages are not permitted to increase enough to remove them, then the vacancies are the result of low wages rather than of a health workforce shortage.

A labour market approach defines how many workers are employed and at what wage level. Mathematically, an overall measure of the responsiveness of the labour market to changes in wages is the wage elasticity of health professionals employment - E. It points to the needed percentage increase of wages to increase worker employment by a certain percentage. ( $E = \% \text{ change in employment} / \% \text{ change in wages}$ ). The E equals 1 when percentage change in employment generate adequate percentage change of wages. Elasticity below 1 is pointing at wage per cent increase insufficient to yield required health workforce employment. Based on a health service demand analysis, one might observe how much of a wage increase is required to generate the necessary number of health professionals at the market in order to satisfy health care requirements.

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(55) Scheffler RM (2012). The Labour market for human resources for health in low- and middle-income countries. Human Resources for Health Observer 11. Geneva: World Health Organization.

(56) See above annotation n. 53





When health labour markets do not follow labour market forces, they are at risk to fail. Often, it is the case when government regulates or small number of employers dominate the health workforce labour market, causing the market to behave differently from a competitive market. For instance, in case of health workforce shortage, the increasing wages to address it may have a big effect on overall wage costs, thus, a monopsonistic employer may be reluctant or could take a long time to adjust increase wages to remedy a shortage. For that reason, the calculation of health workforce demand is not equal to the calculation of health professionals based on health needs. A symptom of market failure is the presence of “ghost workers” in public sector. Those low motivated and unproductive workers draw salaries regardless of their attendance and often decide for dual practice. The remedy in this case would be to link health professionals’ remuneration with their productivity, and to tie productivity growth with a wage raise<sup>(57)</sup>.

By understanding the interplay of demand and supply components of labour market, wages potential and of other compensation is recognized to influence on the number and location of health professionals deployment; by changing wages and other benefits one also can change the health workforce supply and demand across time.

### **Wages expected influence on attractiveness of different fields of study and occupations, the choice of practice location, as well as retention rates and retirement patterns**

*Ono T, Lafortune G, Schoenstein M, 2013*

Wage related payments, such as annual income guarantees, or bonus payments are used to compensate for less advantageous and challenging working conditions in rural and underserved area<sup>(58)</sup>.

They can be set at different points of the career of a health professionals in rural postings this areas. The kind of financial incentive (salary, fee-for-service payments, capitation-based payments) and its dynamics depends on the outcome that was meant to be guaranteed<sup>(59)</sup>. For example, it could be for establishment and the first two years

(57) Idem

(58) WHO (2011). Technical Meeting on Health Workforce Retention in Countries of the South-eastern Europe Health Network Bucharest, 28-29 March 2011. Copenhagen: World Health Organization and Ono T, Schoenstein M, Buchan J (2014). Geographic Imbalances in Doctor Supply and Policy Responses”, OECD Health Working Papers, No. 69, OECD.

(59) See annotation above: Ono T, Schoenstein M, Buchan J (2014). Geographic Imbalances in Doctor Supply and Policy Responses”



of a practice in an underserved region (in France and Denmark), or during the entire career in underserved areas (in Canadian province of British Columbia). Also, it could be at the end of the career to improve health workforce retention and to postpone retirement (in Alberta, Canada and in Germany), or to smooth over retirement and replacement.

Financial incentive could be based on a fixed list size of patients and linked with a return-of-service obligation of few years (in Denmark), based on the characteristics of their community (in Canadian province of British Columbia), when they meet certain quality standards (family doctors in the Republic of Moldova), or measures of population deprivation related workload and a rurality index to assign overall weightings to patients (England and Wales)]<sup>(60)</sup>.

Monitoring and evaluation of the effect of financial incentives may be difficult for various reasons. Frequent reasons are that instead of one source and one kind of financial incentive there is a package of various incentives, or multiple grants from different sources at the same time, which are making difficult to delineate variety of payment mechanisms across a range of institutional arrangements.

Available evidences report mixed effects of direct financial incentives to practise in rural areas or placing medical graduates in developing and in developed countries, ranging between positive and inconclusive results. For example, in Australia financial incentives succeeded to sustain a 65% retention rate of long-servicing physicians in remote and rural areas five years after financial incentives<sup>(61)</sup>. Nigerian financial incentives scheme in two years attracted 42- 46% of health professionals to rural areas<sup>(62)</sup>. Some South-eastern Europe countries have also moderately increased the number of general practitioners and nurses in rural or remote areas by offering them financial incentives<sup>(63)</sup>.

Financial incentives besides education, regulation, and personal and professional support are included in WHO Global Policy recommendations evidence-based to be

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(60) See annotation above: Ono T, Schoenstein M, Buchan J (2014). "Geographic Imbalances in Doctor Supply and Policy Responses" and WHO (2012). "Attracting and retaining health workers in the Member States of the South-eastern Europe Health Network A policy brief." Copenhagen: World Health Organization.

(61) WHO (2010). "Increasing access to health workers in remote and rural areas through improved retention." Global policy recommendations. Geneva: World Health Organization.

(62) Idem

(63) See above WHO (2012). "Attracting and retaining health workers in the Member States of the South-eastern Europe Health Network A policy brief"

effective in improving attraction, recruitment and retention of health professionals in remote and rural areas<sup>(64)</sup>. Its quality is low, but supportive evidence implies for the long-term effects and they have to outweigh the opportunity costs of living in rural areas, and that implies high recurrent costs and combination with other interventions.

Financial incentives are frequently used as a “first-aid” measure to address acute health professionals retention in rural regions<sup>(65)</sup>. They are strongly recommended to be used to increase retention rates and for only short term, but are less effective for recruitment, since staffing levels remained low in these areas across time. Strongly recommended was to provide bundle of retention strategies in order to successfully attract and retain health professionals in remote and rural areas<sup>(66)</sup>.

### **Wage level can be expected to influence the number and mix of health professionals that can be employed under any overall or sector budget constraints**

*Ono T, Lafortune G, Schoenstein M, 2013*

The level of remuneration and other recurrent costs is important determinant of the number and skill-mix of deployed health professionals, particularly in countries that have global budgets for public spending on health. Particularly in those countries, evidences suggest that crisis-related financial measures led to reduced intake in medical schools numbers and retirement benefits<sup>(67)</sup>. In addition, some health systems extended retirement age, diminished job and career prospects, which has in turn increased outflow of health professionals<sup>(68)</sup>.

For example, in Spain, many physicians opted for early retirement after announced changes in penalties for early retirement, out of which some went to the private sector. Due to salary and promotions freeze and authorized only 50% post-replacement, some

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(64) See above WHO (2012). Attracting and retaining health workers in the Member States of the South-eastern Europe Health Network A policy brief and Dieleman M, Kane S, Zwanikken P, Gerretsen B (2011). Realist review and synthesis of retention studies for health workers in rural and remote areas. Increasing access to health workers in rural and remote areas, Technical report 1. Geneva: World Health Organization.

(65) See above annotation n. 51

(66) See above annotation n. 59

(67) See above annotation n. 51

(68) Idem

evidence pointed to increased emigration of nurses and physicians<sup>(69)</sup>. In Estonia and Poland, the significant fall of number of health professionals applying for recognition of qualifications coincided with salary increase and improved working conditions, introduced in the preceding years to decrease move abroad and retain the active workforce in the country<sup>(70)</sup>.

Similarly, Lithuania introduced structural wage increase for medical professionals (by 220% in the period of 2006 and 2009) in order to keep medical professionals in the system after EU entry in 2004<sup>(71)</sup>. However, financial incentives alone were not sufficient to keep health professionals in the domestic market. Ghana retaining system also failed due to introduction of relatively low “bonding schemes” requiring health professionals to serve for a number of years after graduation before leaving the Ghana health service, otherwise pay back<sup>(72)</sup>.

**Any current or future gaps (shortages or surpluses) of different categories of health care providers can also be expected to be mitigated through wage adjustments, though these adjustments were almost never taken into account in the models.**

*Ono T, Lafortune G, Schoenstein M, 2013*

All models for health workforce planning and projection require data on health workforce expenditures to make meaningful policy recommendations. Policy questions, feasibility and costs of data collection and processing determine the number and type of these indicators and the level of data disaggregation to be used in the model. A minimum set of indicators for monitoring expenditure on health professionals consist of<sup>(73)</sup>: total and per capita health workforce expenditure, GDP proportion of total

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(69) Idem

(70) Kautsch M, Czabanowska K (2011). When the grass gets greener at home: Poland’s changing incentives for health professional mobility. In Wismar M et al., eds. Health professional mobility and health systems. Evidence from 17 European countries. Copenhagen, WHO Regional Office for Europe on behalf of the European Observatory on Health Systems and Policies: 419-448 and Saar P, Habicht J (2011). Migration and attrition: Estonia’s health sector and cross-border mobility to its northern neighbour. In Wismar M et al., eds. Health professional mobility and health systems. Evidence from 17 European countries. Copenhagen, WHO Regional Office for Europe on behalf of the European Observatory on Health Systems and Policies: 339-364.

(71) Tjadens F, Weilandt C, Eckert J, MoHProf consortium (2012). Mobility of health professionals. Health systems, work conditions and patterns of health workers’ mobility in, from and to 25 countries at the crossroads of a major crisis. MoHProf summary report. Bonn: WIAD.

(72) Idem

(73) Hernandez P, Tan-Torres T, Evans D: Measuring expenditure on the health workforce: concepts, data sources and methods. In. Mario R Dal Poz MR, Gupta N, Quain E, Soucat ALB editors (2009). Handbook on Monitoring and Evaluation of Human Resources for Health with special applications for low- and middle-income countries. Geneva: World Health Organization.



expenditure on health, government expenditure on health workforce as a proportion of general government expenditure on health, and government expenditure on health workforce as a proportion of recurrent general government expenditure on health. Besides those data on health workforce expenditures, models have to use estimations of: economic growth (average predicted annual percentage change in GDP; total public health sector expenditure, public health sector expenditure on personnel/ non-personnel expenditures), projected changes of remuneration and other recurrent costs (salary bands for each type of staff, in the annual real wage costs and other non-wage compensation (health benefits, housing moving expenses, pension, job security) and estimated private sector expenditure in health care and personnel costs, over the planned period.

Data validity directly determines model accuracy and reliability of the workforce requirements and supply projections. Accordingly, due to variety of validity related reasons, data on wages are not often used in health workforce planning, mainly because of: lack of centralized database, boundary problems to distinguish between labour resources and other activities in health care system, partial coverage of costs, inconsistent information across various data sources, differences in methodologies for collecting and processing data; and potential double-counting due to multiple qualifications or job positions.

Since remuneration of professionals in the health sector should be linked to their productivity, the latter can be used to indirectly estimate the former. To be precise, health professional, productivity is described as the relationship between the input of health professionals, such as the number of hours they work, and the health service output (number of patient visits per hour per health professional over a period of a week or a month, days spent in hospital and other encounters). By using “calculation square”<sup>(74)</sup>, total earnings represent annual earning multiplied by number of jobs or, it can be obtained with multiplying of hourly wages and paid hours. To get annual earnings, hourly wages are multiplied by paid hours per job. In addition, paid hours represent the product of number of jobs multiplied by paid hours per job.

The search for data on health workforce expenditures should include multiple sources. To name some: routine administrative records (employment registries), social health insurance records, budgetary records and others earnings statistics, periodic labour

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(74) Van Polanen PV. Health labour accounts and the system of national accounts. Presented at the fifth meeting of the Eurostat Technical Group on Health Care Statistics, Luxembourg, 19-20 June 2006.

force and other household surveys and censuses, professional regulatory bodies, business and facility registries, book keeping records of private facilities; sickness absence and seasonal workers database; published studies, reports and unpublished information from the ministries of health, education and finance. However, in the absence of reliable data, professional judgement and estimates of key stakeholders may be required. WHO has developed some documents to strengthen health information system (A System of Health Accounts, the Guide to producing national health accounts and other)<sup>(75)</sup>.

The process of simulation is the major tool for assessing the potential impact of various changes on future remuneration for health workforce. Deterministic models assume that an outcome is certain while stochastic models allow for the introduction of random changes in variables and reveal the most likely outcomes and the most robust array of inputs. A range of tools and resources exists to assist countries in developing a national health workforce strategic plan<sup>(76)</sup>. Examples of models that used wages as a variable in health workforce projections are listed briefly in chronological order:

- *WHO Simulation models for health workforce planning, developed by Thomas L. Hall in 2001, explores consequences of alternative policies, includes alternative scenarios and sensitivity analysis to compare input costs and output effects and identify those input variables where errors are likely to have greatest impact on outputs. It also uses economic feasibility test to compare projected public sector workforce costs with projected funds to pay workforce salaries, assuming scenario is considered “feasible” if costs are within 20% of available funds<sup>(77)</sup>.*
- *For most low- and middle-income countries, the WHO workforce projection model is among the most useful tools available for HRH planning and projections with viable policy proposals. It incorporates two validity tests of the projections of the stock of health professionals, first against the likely finances available and, second, against the ability of the health and education systems to produce the type and size of the workforce proposed<sup>(78)</sup>.*
- *Keel University (UK) 1.0 2006 software for health workforce planning is applicable for 400-500 workplaces with option to be electronically linked to WHO HRH Strategic projection model (Box 1 presents example of its application)<sup>(79)</sup>.*
- *Western Pacific Workforce Projection Tool is a software application designed to facilitate the production of comparative, cadre-specific and summary reports for health workforce*

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(75) See above annotation n. 71

(76) See above annotation n. 72

(77) Hall TL (2000). WHO simulation models for intermediate-term health workforce planning. Toolkit for planning, training and management.

(78) Hornby P (2007). Exploring the use of the World Health Organization human resources for health projection model. Presented at the HRH Workforce Planning Workshop, Washington, DC, 13-14 December 2007, [http://www.capacityproject.org/workforce\\_planning\\_workshop/presentations/WHO\\_hornby.ppt](http://www.capacityproject.org/workforce_planning_workshop/presentations/WHO_hornby.ppt), accessed 2014-08-24.

(79) Idem

projections and cost parameters<sup>(80)</sup>.

- *The iHRIS Plan software package is an open source application for human resources information systems strengthening developed by the Capacity Project with financial support from the United States Agency for International Development<sup>(81)</sup>.*
- *Dewdney model used estimates of national economy forecasts and proportion of government budgets allocated to health and to personnel and annual staff training costs<sup>(82)</sup>.*
- *The 2012 report from the Centre for Workforce Intelligence (United Kingdom) describes the model that used wages as a variable affecting the future supply and demand for health professional. It identified that different growth rates in public spending on health might influence the future ability to employ doctors in the NHS over the 30 years projection period<sup>(83)</sup>.*

All models are consistent in that formal evaluation of accuracy, quality and impact of a health workforce planning model means its actual use, regular review and appropriate adjustments as circumstances require.

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(80) Models and tools for health workforce planning and projections. Human Resources for Health Observer, 3. Geneva: World Health Organization, 2010

(81) Idem

(82) Dewdney J. The WPRO/RTC Health Workforce Planning Workbook. Sydney: Centre for Public Health The University of New South Wales, 2001

(83) Ono, T., Lafortune G. Schoenstein M. (2013), "Health Workforce Planning in OECD Countries: A Review of 26 Projection Models from 18 Countries", OECD Health Working Papers, No. 62, OECD Publishing. <http://dx.doi.org/10.1787/5k44t787zcwb-en>, accessed 2014-08-24.

