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## Competitive funding and structures for public health research in European countries

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**Introduction:** The European Union is giving increasing emphasis to research as a driver for innovation and economic development. The European collaborative study PHIRE (Public Health Innovation and Research in Europe) investigated the funding and structures of public health research at national level in European countries. **Methods:** Background materials were prepared for national public health associations of European countries to hold workshops or discussions with research and policy stakeholders on their public health research systems. The reports, supplemented from internet sources for 23 EU countries (four did not contribute), provided information for framework analysis. **Results:** All countries have public funding and administrative structures for research, but structures for public health research are more varied. In most countries, competitive health research funding is controlled by the Ministry of Science, with little input from the Ministry of Health. In four countries, Ministries of Health provide competitive funding alongside Ministries of Science, and in two countries there is a single health research council. There is no comparative reporting of public health research funding, and little connection with European public health research programmes. **Conclusion:** Europe needs a comprehensive picture of national and regional systems of public health research, in order to critically assess them and better adapt to changes and challenges, and to achieve a European Research Area for public health.

Public Health Innovation and Research in Europe (PHIRE), a study led by the European Public Health Association (EUPHA), has studied the uptake of public health innovations in European countries and assessed national public health research systems. This eighth article in a series of nine in the PHIRE Supplement of the *European Journal of Public Health*<sup>1</sup> assesses funding and structures for public health research across European countries.

### Introduction

The European Union (EU) long-term strategies, the Lisbon Strategy in 2000, followed by Europe 2020 (published in 2010),<sup>2</sup> have put research and innovation at the forefront of European social and economic policy. Europe 2020, created after the 2008 economic crisis, proposes 'smart growth—an economy based on knowledge and innovation'. At the time of preparing the Europe 2020 strategy, 'R&D spending in Europe [was] below 2%, compared to 2.6% in the US and 3.4% in Japan'.<sup>2</sup> The broad policy goal for the EU is to raise R&D spending by increasing both EU and national funding.

The EU has developed a 7-year cycle for funding its research. The Eighth Framework Programme running from 2014 to 2020, entitled Horizon 2020,<sup>3</sup> has been developed through extensive consultation with EU Member States governmental bodies, academic, industrial bodies and civil society stakeholders. The programme has three pillars that continue main themes of the previous Seventh programme: there will be more funding for investigator-led proposals through the European Research Council; there are more

funds for industry-related research; and multi-partner collaborative research will be focused around six 'Societal Challenges'.

The EU also seeks to extend the European Research Area—that is, to develop collaboration between member states, for freer movement of scientists and for sharing of programmes and resources.<sup>4</sup> The aggregate spending (public and private) on research directly by EU Member States is larger than the EU spending; and their national policies for research are therefore important collectively for Europe. The European Commission's Joint Research Centre has set up ERA-Watch, a web-based overview of the research systems and capacities of the member states.<sup>5</sup> This is an important resource for comparable information, but it does not address research down to thematic areas such as health.

Two previous comparative studies of health research in Europe have addressed both European and member state levels. *SPHERE*<sup>6</sup> described national public health research systems from governmental informants, and found that national research ministries saw Ministries of Health as leading public health research.<sup>7</sup> Also, bibliometrics in *SPHERE* showed substantial differences between member states in research publications, with lower publication rates in the 12 EU new member states of Eastern and Southern Europe.<sup>8</sup> STEPS investigated the contribution to public health research of civil society organizations, and held workshops on public health research commissioning in the EU new member states.<sup>9</sup> It also developed a typology for describing public health research structures based on funding streams and strategies.<sup>10</sup>

In an early comparative study, Braun analysed health research in the USA, France, Germany and the UK,<sup>11</sup> including a chapter on

public health research. Cross-national information about health services research has been collected through a European collaborative study.<sup>12</sup> Health service research and public health research in Denmark, the Netherlands, Norway and the UK have been compared,<sup>13</sup> and reviewed public health for practice in three of these countries.<sup>14</sup> There have been individual reviews of health research performance in Nordic countries, such as Sweden.<sup>15</sup> OECD<sup>16</sup> provides generic data on funding health/medical research in the public sector.

In PHIRE, information was collected across European countries to inform national stakeholder meetings on innovation and research. We report here comparisons of these data on national structures and funding for public health research in Europe.

## Methods

PHIRE was built on the knowledge gained through the earlier collaborative studies. The broad definition of public health research—medical and social research at population and organizational level—was developed in *SPHERE*.<sup>7</sup> Working in English, national public health associations reviewed the structures of public health research previously described in STEPS<sup>10</sup> and information on calls and programmes opened for public health research in 2010.<sup>17</sup> The national report template asked the following: (i) Are there clear roles, responsibilities and collaboration between Ministry of Science, Ministry of Health and other funders—regions, universities, independent foundations? b) Is commissioning included within a national strategy for health/public health research?

PHIRE national reports<sup>18</sup> were assessed using framework analysis.<sup>19</sup> Where there was reference to national systems of public health research, the text was separated and organized into themes. The narrative presented here, including quotations, is drawn from these reports. Supplementary material was gained from national research web pages and general sources such as ERAWATCH<sup>5</sup> for data on the percentage of national resources (GERD—Gross Expenditure on Research and Development) going to research.

## Results

There were 23 country reports from the 27 EU countries (no reports for Belgium, Hungary, Luxembourg and Spain). Table 1 summarizes the structures and funding through Ministries of Science and Ministries of Health, and Supplementary Table S1 gives more details. In 17 countries, the lead for competitive funding of public health research is through the Ministry of Science or agency (research council). In four countries, funding is jointly with the Ministry of Health e.g. Ireland and the Netherlands. In four countries, there is an independent research programme of the Ministry of Health as well as from the Ministry of Science.

### General research structures

**Austria** and **Estonia** have had rapid expansion of their research structures in the past decade. Research spend is 2.7% (of GERD) in Austria through a mix of funding arrangements, including research councils, municipalities and independent research funds. The Austrian Academy of Sciences promotes currently 65 non-university research institutions. Public health research in Austria, however, is not separately identified. **Estonia** has increased R&D intensity from 0.6% in 2000 to 1.6% in 2010. It has diversified public health research within a small number of institutions—particularly in the National Institute for Health and Development, funded by the Ministry of Health. Also the University of Tartu has historic practice in health and hygiene research. The Estonia Academy of Sciences transferred direct research to universities in the early 1990s, and the Academy now provides science policy advice and promotes science cooperation at national and international levels.

**Table 1** Structures for competitive funding of public health research of 23 European countries

Structure	Ministry of Science/ Education strong health programme	Independent Health Research Board	Ministry of Health lead research as well as Ministry of Science/Education
EU (27) countries <sup>a</sup>	Austria Bulgaria Cyprus Denmark Estonia Finland France Germany Greece Latvia Lithuania Malta Poland Portugal Romania Slovakia Slovenia	Netherlands Ireland	Czech Republic Italy Sweden UK

<sup>a</sup>: Data not available for Belgium, Hungary, Luxembourg, Spain.

Some countries have developed ‘technology’ research in parallel to their research councils.

In **Finland**, while the Academy of Finland provides competitive grant funding, the Agency for Technology and Innovation (TEKES) has a programme on health and social care 2008–15. **Lithuania** and **Slovenia** also fund innovation through separate organizations. **Denmark**’s research council is divided in two, with the Danish Council for Strategic Research (incorporating some funds from the hospital sector in 2007) focused towards ‘an agenda responsive to ministerial wishes’.

In some countries, the only avenue for health research applications is through the national research council. In **Bulgaria**, **Portugal** and **Cyprus** there are open calls (not every year), which are assessed by thematic panels. In Bulgaria and Portugal, the national public health institutes can apply to these funds, but Cyprus has no national institute of public health for research—the public health functions are undertaken within the Ministry of Health. **Slovakia** has directed some funds for health research through the Ministry of Health. **Latvia** defined five priority areas for funding of the research for the period from 2010 to 2013, and one of them was ‘public health’ but including prevention, treatment, diagnostics and biomedical technologies. The country workshop, however, reflected that biomedical research projects are funded much more in Latvia than public health research. The Latvia national report stated: ‘Even when the public health was set as a priority for research by the government, leading medical centres developed partnerships and established consortia to apply for biomedical research funds under the name of public health’.

### Funding public health research

Data on funding public health research is not readily available within national research systems. There may be a ‘headline figure’: for example, in **Germany**, the Federal Ministry for Education and Research (BMBF) is providing ~€5.5 billion for health research between 2011 and 2014. In the **UK**, medical research ~€3 billion is allocated per annum through the research councils, National Health Service and independent foundations/charities (but some of this is for long-term funded research units rather than shorter-term competitive projects). **Estonia** has no thematic calls for public

health research, but an estimate suggested that public health receives a high figure of 17% of all medical research, €40 million per annum. The **Austrian** Research Promotion Agency was estimated to spend <2% in the area of public health. The national report stated that although 'research budgets of funders have been spent on public health research, these budgets are ridiculously small compared with biomedical research budgets'.

The European Structural Funds were identified as important sources of support for health research in the Eastern and Southern European countries. **Bulgaria** had a general call in 2012 of €7.5 million from European Structural Funds, with one area of 'Health and quality of life, biotechnology and organic food'. In **Cyprus**, health sciences received €2.5 million for competitive research calls from the €40 million of DESMI 2009 programme. The **Malta** Council for Science and Technology allocated €1.1 million for research in 2011. Another relevant source for these countries was bilateral funding. The **Lithuania**-Swiss cooperation programme in environmental sciences and technologies, health (life) sciences and natural sciences had a budget of CHF 9.7 million. Similarly, **Bulgaria** has bilateral research funding from Norway.

In **Greece**, the General Secretariat for Research and Technology allocated European Structural Funds for 2009–15 as Thales (non-thematic), total €120 million with 18% allocated to health and medical sciences: first projects started in 2011; and the Aristeia (Excellence) call in 2011 had €60 million from the European Structural Funds for 'bottom-up' non-thematic research. The **Austrian** Science fund spends €200 million per annum across all research areas, within 49 panels and just one including public health.

Some information on public health research funding can be drawn from retrospective reports on grants allocated. The **Slovakia** Research and Development Agency (APVV) Call 2010 had 17 successful proposals in medical sciences (of which two public health research) accepted for funding totalling €3.6 million for medical sciences, 9.4% of total research budget. Also, Slovakia's Scientific Grant Agency (VEGA) call 2010 selected 541 proposals for financial support (61, 11.3% from medical sciences). Two to three (0.5%) of all those selected might be considered public health research. The **Czech** Science Foundation (GACR) funds competitive applications and also supports institutes of the Czech Academy of Sciences. The Ministry of Health has a growing programme, with mainly clinical focus but boards including public health research subjects.

In **Denmark** in 2011, the National Council for Strategic Research allocated around €20 million to 'individual, disease and society' (one of nine projects was public health: lifestyles of immigrants), and €25 million to health, food and welfare (1 of 12 projects on public health: 'dietary guidelines'). The Research Council estimates that only 5% of the total Danish research funding goes to the Strategic Research Committee and 7% through the Research Councils. There were no research funding reported from foundations. Financial support for most research is from the Ministry of Education through grants directly to universities.

Regional or sub-national funding was often significant in countries where the health services are managed at sub-national level, including **Austria**, **Italy** and the **UK**. For example, the Research Centre for Prevention and Health is funded by the Capital Region of **Denmark**, and is undertaking 'Inter99', a controlled intervention study for cardiovascular disease with 60 000 people investigating how structural changes in neighbourhoods affect changes in behaviour.

**Sweden** and the **UK** are among countries with large non-profit foundations funding health research, particularly related to specific conditions such as disability and cancer.

Several Eastern European countries have links for bilateral research collaboration. **Estonia** 'has concluded international framework agreements for scientific and technological cooperation with more than 40 countries including the USA,

China, India, Mexico, Ukraine, etc.' **Poland** has important bilateral funding from Germany and Norway. **Romania** has established cooperation agreements with the European Science Foundation and national research agencies for France, Germany, Switzerland and the USA, as well as countries of the European Economic Area and the Transnational Cooperation Programme of South East Europe. Similarly the **Austrian** Council for Research and Technology Development Strategy 2020 both supports collaboration within the European Research Area, and also cooperation and removing barriers for research European neighbouring countries.

### *Inter-ministerial collaboration*

Ministries of Science and Ministries of Health both have strong interests in health research, but few countries indicated evidence about joint working. In **Sweden**, the Council for Working Life and Social Research 'should be informed about other research financiers' support for research, if possible, coordinate calls and make regular compilations of total research funding in research areas'. The Swedish Research Council and the Swedish Council for Working Life and Social Research have since recently formed a 'group for united action'. In the **UK**, the National Institute for Health Research (funded by the Ministry of Health) and the Medical Research Council have representatives in each other's boards, exchange priorities and have communication with health charities (which also fund research to significant levels) and health industries sector (pharmaceuticals, biotechnology).

In **Ireland**, there are 'regular discussions' between the Health Research Board and the Department of Health. In **Cyprus**, a Ministry of Health representative sits on the Administrative Council of the Research Promotion Foundation. In **Estonia**, the Ministry of Health has appointed a staff officer directly for research, and the Ministry of Education and Science states that it is developing a clearer link with Ministry of Health. In **France**, the large public health research provider, INSERM, is jointly accountable to both ministries, but the Ministry of Health has limited control over the budget or priorities. The **Latvian** Ministry of Health has made proposals for health research for 2013–20 to the Ministry of Education and Science, and it is expected that collaboration between the Ministries would increase.

**Portugal** has a National Health Plan with priority programmes, which identify associated research as important; but no concrete research topics have been decided yet. In **Slovakia**, the Scientific Board of Ministry of Health prepared a 'list of eligible areas for the upcoming challenge to scientific research projects in 2012'. In **Slovenia**, the Ministry of Health contributes to the Target Research Programme, which has research including public health objectives. Funding is a beneficial factor for cooperation in **Austria**: 'For the few big funders like the ministries, City of Vienna, Social Security Institutions, National Bank Fund, coordination and strategic thinking, formal and informal exists partly because of the necessity for co-funding of projects by different funders, either imposed by statutory regulations of the fund or forced by the requirements of projects'.

## **Discussion**

All EU countries have competitive funding for health research grants available through their Ministry of Science or Ministry of Education, or a science research council or agency, as well as funding allocated directly to research institutes and universities. There is often a National Research Council which makes calls for research and allocates grants through peer review boards. The councils may either have a single 'open' calls to researchers from all disciplines, which and are then evaluated by specialty boards, or there may be separate specialized councils. Some agencies also define thematic topics within the call—for example, the Netherlands Health



Research Council (ZonMW) has about 30 themes for research applications.

In four countries (Czech Republic, Italy, Sweden and the UK) the Ministry of Health, or the national health system, provides competitive funding for health research as well as the Ministry of Science. In Ireland and the Netherlands, the national health research council is linked to the Ministry of Health. Otherwise, Ministries of Health support public health research non-competitively in national institutes of public health in countries such as in Estonia, Italy, Poland and Slovenia.

The study found a relative lack of communication and collaboration between Ministries of Health and other stakeholders in setting health research agenda. It is a crucial difficulty for public health research that the Ministries of Science promote biomedical research separately from Ministries of Health. While investigator-led biomedical science does not necessarily match the interests and needs of Ministries of Health, the Ministries of Health themselves may fail to have clear agendas or capacity for commissioning public health and health systems research, and their communication with other stakeholders is also limited. Only in a few countries are health care systems directly involved in developing research agendas.

STEPS<sup>17</sup> provided a framework and database on European national public health research structures, and ERAWATCH has more detail across policies (although for research as a whole rather than health research). Although some countries have national databases describing research that has been funded, these rarely allow analysis for public health studies alone. There is a need to develop standard ways of describing public health research within national systems, so that countries can collect data, and report and monitor in the same way.

## Conclusion

Few countries had current descriptions of their health research system, and it was not easy to say, at national level, who is doing what for public health research. It is even more difficult to describe how much is spent, and how financial flows compare with other areas of research. Europe needs a comprehensive picture of national and regional systems of public health research to critically assess them and better adapt to changes and challenges. The improvement of public health practice through use of best available knowledge depends on developing a community of national public health researchers within the European Research Area.<sup>20</sup>

## Supplementary data

Supplementary data are available at *EURPUB* online.

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