Number 82 • 2006

WARWICK INSTITUTE *for* EMPLOYMENT RESEARCH
1981 - 2006
IER
Celebrating 25 years

BULLETIN

Skills and the prospects for growing new medical technology businesses

The Warwick Institute for Employment Research (IER) has undertaken a number of recent projects on the theme of employment in the medical technologies industry. This *Bulletin* presents findings from one particular study undertaken by IER in partnership with Warwick Manufacturing Group (WMG) and IFF Research, as part of a research programme funded by the Learning and Skills Council (LSC) Coventry and Warwickshire and the European Social Fund (ESF). The study investigated skills and the prospects for growing new medical technology businesses, with a particular focus on the West Midlands region.[1]

Introduction

The production, marketing, and distribution of medical technologies is potentially a source of high value, high skill, and high wage employment. The market for medical devices is set to increase due to: people living longer; an increased range of medical products that individuals can administer themselves; and growing affluence that allows people the opportunity to access the latest technologies. Employment in medical technologies can also contribute towards the replacement of jobs lost in traditional industries. But given the level of structural change that has taken place over recent years, this is a formidable task. Worldwide, the medical technology industry is a competitive one with many countries seeking to serve the global market with high value medical devices.

So, to focus on the West Midlands, what does the region's medical technologies cluster look like – and what are its prospects for the future? Evidence from a previous study relating to medical technologies which compared the situation in Germany, Medicon Valley (Denmark), Massachusetts, and the West Midlands – undertaken for Advantage West Midlands by IER and WMG – illustrated that much of the sector or cluster is comprised of companies that engage in a range of activities in addition to medical technologies.

This raises a number of issues relating to the skill sets that companies require. Companies – especially those in manufacturing – often claim that they are applying a standard set of skills or problem solving capabilities to, in this case, medical devices. There are some differences, such as ensuring the technology is right first time for the client, rather than being engaged in a series of fixes once the technology has been supplied, and there are strict regulatory codes to abide by. But the overwhelming impression is that these are not onerous requirements and relate, primarily, to management and professional grades within an organisation.

Perhaps the greatest challenge relates to the decision to diversify into medical technologies in the first case, and then successfully enter and secure a position in the market. In other words, having *strategic vision*.

Aims and objectives of the study

The aims and objectives of the most recent study were to identify:

- the characteristics of companies that have diversified into the production of medical devices and technologies in the West Midlands;
- the skill needs that arose as companies moved into the production of medical devices and technologies;
- the characteristics of companies that have the potential to move into the medical devices and technologies market in the West Midlands;

[1] For more details of the research report, *Medical technologies in the West Midlands: skills and the prospects for growing new medical technology businesses*, see the 'Further information' section at the end of this *Bulletin*.

- the skill needs that will arise as these organisations move into medical devices and technologies.

Methodology

The following methods were used:

- a review of available reports – both international, national, and regional – relating to the skill needs of medical technology companies;
- a representative survey of companies that have diversified into medical technologies and those that have the potetial to do so;
- a survey by Medilink West Midlands of its membership;
- a series of 20 case studies of companies to capture more detailed information about the skill needs that arise when companies diversify into medical technologies;
- an audit of training supply relevant to the needs of the medical technologies cluster.

Defining the medical technologies cluster in the West Midlands

The starting point for the study was to view the production of medical technology products or services within the context of a cluster. For the purposes of this study a cluster was defined as:

- organisations that are predominantly producers of medical devices (*i.e.* according to their Standard Industrial Classification – (SIC) – category);
- organisations that produce medical technologies (goods and services) but where they are not the main product or service delivered (and accordingly classified to another SIC category);
- organisations producing intermediate inputs to the medical technology sector (*e.g.* support services such as accountancy services, products used in assembly, process technologies, *etc*.).

The business environment

The overall picture of the current business environment was reasonably buoyant. In summary:

- the majority of medical technology businesses believe the market for medical products will remain strong over the next five years; and
- 57 per cent of medical businesses were very / quite likely to diversify into new high value-added markets (compared with 45 per cent of other businesses in the region).

Diversification into medical technology

The evidence suggests that there is substantial scope for workplaces to expand into medical markets. Many businesses not currently engaged in producing medical products or services felt that their activities had a potential medical application and some had considered diversifying into such a market. Evidence of past diversification can be found in the fact that around half of medical technology businesses had previously been engaged in some other form of activity.

The drivers of diversification are varied – the decline of traditional markets, the need to increase profits, and the emergence of new market opportunities. Correspondingly, the main reason why diversification was not occurring was that existing markets were strong and there was no need to diversify. A lack of skills or capital were also reasons for not diversifying. Key findings were as follows.

- Around 20 per cent of businesses not currently engaged with medical technology felt that their products had potential medical applications. Around 10 per cent had considered diversifying into medical markets.
- Over 50 per cent of current medical technology businesses had diversified into medical technologies since the business was first established.
- The workplaces that reported that they were currently engaged in the production of goods or services with a current medical application were establishments of varying sizes, although most employed relatively few people – 82 per cent had fewer than 50 employees.
- Overall, medical technology companies reported that 16 per cent of their turnover was from the medical side of their business in 2005. On average, they had around 32 per cent of their employees engaged on the medical side of their businesses.

The main activities in which companies in medical technologies were engaged, based on the SIC were:

- 17 per cent of the sample reported that medical products comprised their main output;
- 35 per cent, general engineering (other than medical);
- 15 per cent, chemicals/pharmaceuticals; and
- 18 per cent distribution.

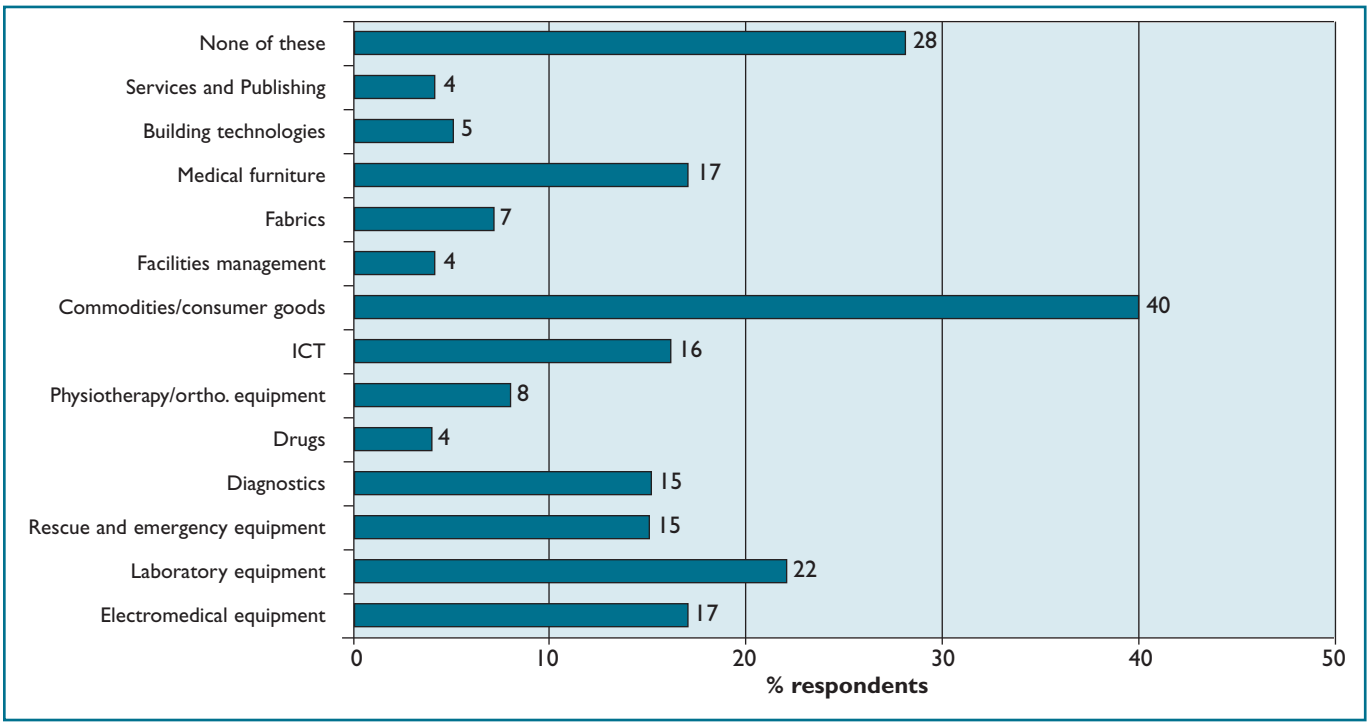
Overall, 35 per cent of establishments had a member of their senior management team who had responsibility for the medical side of the business; overall only 10 per cent of workplaces had a senior manager working full-time on the medical side of the business.

Just under half of all medical technology companies produced products they had designed themselves (42 per cent), and a few were producing medical goods under licence from another company (6 per cent).

Diversification and skills

A key issue was whether the development of the medical technology cluster was being hindered by skill shortages and, if so, how such shortages might be addressed. It was difficult to generalize about skill needs, because the cluster was so varied. There was a mix of establishments where the main output was a medical product or service, and a range of other manufacturing and service establishments where medical products and services formed only a part, and not the main part, of their output. Nonetheless, there was evidence that the development of the

Types of medical activity in which workplaces engaged



Base: All workplaces engaged in medical technologies
Source: LSC/ESF Medical Technologies Skills Survey (IER/IFF)

medical technologies cluster was, and continues to be, inhibited by skills supply. The most direct evidence was to be found in the recruitment problems reported by employers in the medical technology cluster.

Diversification was likely to increase the skill demands on these workplaces and intensify the skill shortages they already experience. If regional policy is to encourage companies to diversify into applications of medical technologies then companies will need assistance, at least in the transition phase, in adapting their existing skills and competencies and acquiring new ones. If employers are to move into the medical market, there are a range of critical skill needs that they, and local/regional development agencies, will need to address.

Key findings indicate:

- around 13 per cent of businesses encountered problems in recruiting staff to the medical side of their business;
- design skills and knowledge of medical issues were critical skill needs for businesses at the point of diversification;
- 66 per cent of medical technology businesses had taken steps to obtain critical skills, mostly by undertaking training.

Policy implications

A number of key messages have emerged from the evidence. These are:

- there is considerable scope for businesses in the West Midlands to enter medical related markets. Many businesses not currently producing medical technology related products or services have done so in the past and consider their existing activities to have potential medical applications;
- the principal skill constraint on the development of medical technology related business is identifying opportunities and then exploiting them. This constraint may be greatest for small businesses;
- successful diversification and innovation relies on a level of creativity in the senior team, often embodied in the capability of, and led by, the MD of the company. The study identified higher levels of R&D and design activity in medical technology companies compared with non-medical companies;
- small companies – who make up much of the medical technology cluster – often develop new business on the back of particular opportunities that arise, or from requests by particular customers. But it is not easy for them to translate that demand into a sector wide and generalised need for their business; nor to convert such opportunities into a set of skills that will carry the business forward in that sector;
- the study provides evidence of this in the lack of focus in business responses on skills recruitment. Failure to get these aspects right can be a serious stumbling block for development of the business and highlights the need to provide support to a cluster to help the follow through from strategic or opportunistic diversification into appropriate skills and process development.

Thus, if the region is to develop a world class medical technology cluster it will require action on two fronts simultaneously:

- assistance to companies to equip them with the strategic skills necessary to identify and exploit market opportunities; and
- development of a workforce capable of meeting production demands at the point at which businesses diversify into medical technologies.

Realising Potential

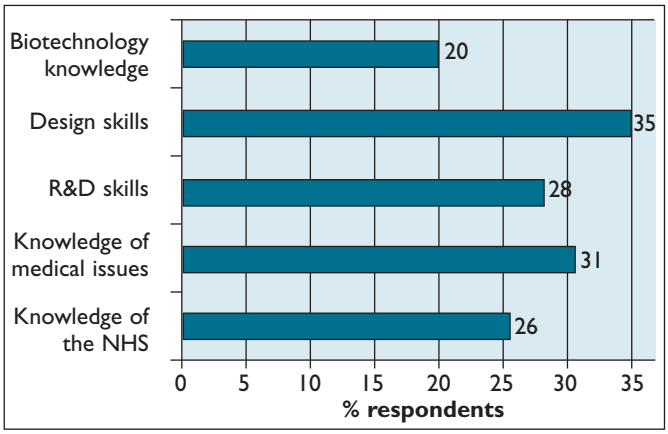
The analysis presented here suggests that a substantial number of workplaces might enter the medical market at some point in the future.

Of the total potential population, a fifth reported that their products currently have a potential medical application although they had not exploited it. This provides a highly conservative estimate of the total number of organisations that might diversify into the medical market. They are the ones that realise their current products have a medical application – even though they have not done anything to exploit this application – but there are likely to be others who have the potential to serve the medical market even though they have yet to realise this. Many have not considered the medical market because their existing markets are, for the time being, sufficiently strong.

Around a third of workplaces reported that they had recruitment problems and these had a substantial and negative impact on their business. Diversification is likely to increase the skill demands on these workplaces and hence intensify the skill shortages they already experience. If regional policy is to encourage companies to diversify into the medical technologies market, then the evidence presented suggests that the unmet skill needs of those companies – already high – will increase further. More concisely, these companies will need assistance, at least in the transition phase, in adapting their existing skills and competencies and acquiring new ones. From a more optimistic viewpoint, the sample of potential diversifiers analysed in the research have a high degree of commitment to training and, accordingly, are unlikely to be averse to further developing their workforces to meet the needs of serving the medical market.

The training needs of the cluster are complex. At one level, general skills are required by engineering establishments – typically technical/practical skills. Beyond these are requirements for specialist medical related skills, such as knowledge of specific medical issues, working with the NHS, *etc*. These gaps between the skills available to employers and those they ideally require, affect a large proportion of workplaces where the principal output is a medical product or service. If companies in the region diversify into the medical market, then the absolute number of workplaces reporting this type of unmet skill need is likely to increase. If employers are to move into the medical market, there is a range of critical skill needs that employers, and local/regional development agencies, will need to address.

Critical skill needs in relation to medical applications and markets



Base : All workplaces engaged in medical technologies
Source: LSC/ESF Medical Technologies Skills Survey (IER/IFF)

Conclusion

The following key points arise from the study.

- With regard to medical technologies there is a long way to go, but with considerable potential to go far.
- A better sense of direction may be required at strategic level within the West Midlands region.
- If the West Midlands is going to catch up with other areas of the world, it needs to act quickly.
- Diversifiers tend to do better than non-diversifiers
- There is a sense that medical markets will remain strong over the next 5 years
- Diversifiers are looking to higher value added markets in the future.

Further information

The study was conducted by Terence Hogarth, Chris Hasluck (both at IER) and Colin Davis (WMG). Many thanks are due to Jon Cunningham (at Learning and Skills Council, Coventry and Warwickshire) for his help with the study. More information about this study and IER's medical technology skills research programme can be found at http://www.warwick.ac.uk/go/medtech or by contacting Jo Ciriani at jo.ciriani@warwick.ac.uk.

For further information about other areas of IER's research and publications, visit www.warwick.ac.uk/IER or e-mail: ier@warwick.ac.uk.

*In 2006/07 IER will celebrate its **25th anniversary**.*

A series of events, including thematic seminars and conferences, are planned. Further details will be advertised shortly.