October 2025

Life and Health Sciences Skills Assessment

Executive Summary

Northern Ireland City and Growth Deals

PURPOSE OF ASSESSMENT

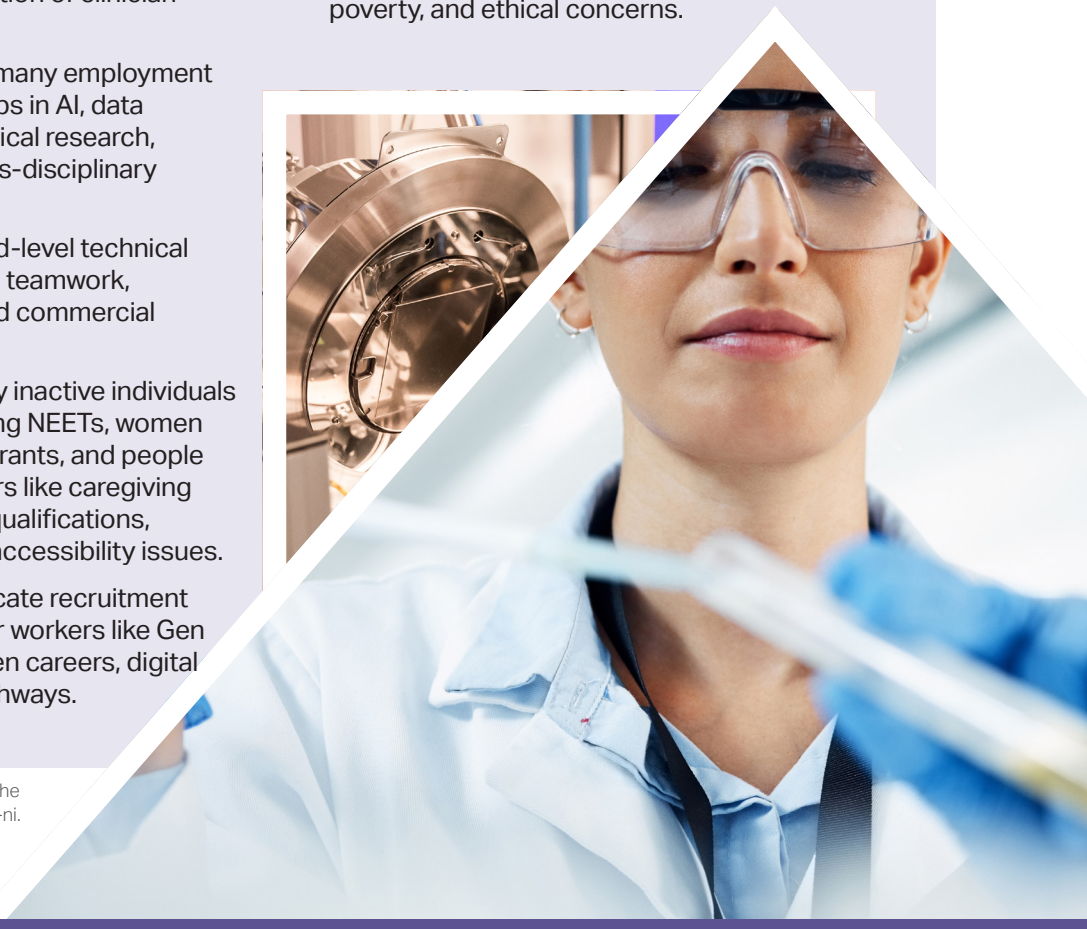
This Life and Health Sciences (LHS) Skills Assessment has been developed to evaluate the current and future workforce needs of one of Northern Ireland's most dynamic and strategically important sectors.

It comes at a time of significant opportunity, with £1.2 billion of investment through the City and Growth Deals and the potential to create 70,000 new jobs by 2035[1]. The assessment provides a detailed analysis of existing skills, emerging gaps, and future demand, offering a roadmap to ensure the sector is equipped with the talent required to drive innovation, attract global investment, and deliver improved health outcomes for society.

PRIORITY CONSIDERATIONS

The assessment identifies several pressing challenges and structural barriers:

- A mismatch between education provision and industry demand, with a strong focus on Level 6+ qualifications but limited opportunities at Levels 2–5. This restricts entry and progression for many learners, especially those from disadvantaged backgrounds or seeking vocational routes.
- There is a significant gap in clinical academic capacity in Northern Ireland, with too few clinical academic training places available to develop the next generation of clinician-researchers.
- Low digital literacy across many employment levels, with critical skills gaps in AI, data science, cybersecurity, clinical research, regulatory affairs, and cross-disciplinary expertise.
- Persistent shortages of mid-level technical staff and soft skills such as teamwork, adaptability, leadership, and commercial acumen.
- Over 290,000 economically inactive individuals in Northern Ireland, including NEETs, women returners, older adults, migrants, and people with disabilities face barriers like caregiving responsibilities, outdated qualifications, language challenges, and accessibility issues.
- Generational shifts complicate recruitment and retention, with younger workers like Gen Z prioritising purpose-driven careers, digital innovation, and flexible pathways.
- Underdeveloped industry-led training, apprenticeships, and micro-credentials, alongside fragmented and inconsistently delivered funding for skills initiatives.
- SMEs struggle to attract talent with the right blend of technical and commercial skills, while regional disparities restrict balanced access to opportunities.
- Digital transformation is slowed by low adoption of AI and automation, digital poverty, and ethical concerns.



1 City and Growth Deals | Department for the Economy. Available from: www.economy-ni.gov.uk/articles/city-and-growth-deals

THE POTENTIAL OF THE LHS SECTOR IN NORTHERN IRELAND

Despite these challenges, the LHS sector's potential is immense. It already contributes over £1.3 billion in Gross Value Added annually, directly employing more than 27,600 people and underpinning an additional 75,000 roles in health and social care[2].

The sector spans pharmaceuticals, biotechnology, diagnostics, medical devices, digital health, and clinical research, supported by over 300 businesses, 18 world-class research centres, and more than 1,000 researchers. Northern Ireland's strong higher and further education provision, led by Queen's University Belfast and Ulster University, plays a vital role in talent development and research excellence. The integrated health and social care system, enhanced by the Encompass programme, provides a unique platform for innovation, clinical trials, and real-world evidence generation[3].

Strategic investments such as the City and Growth Deals Centre for Digital Healthcare Technology, iREACH Health, Momentum One Zero, the Centre for Food and Drug Discovery, the Cognitive Analytics and Digital Robotic Innovation Centre, and the Graduate Entry Medical School in Derry~Londonderry will accelerate innovation, foster collaboration, and create high-value jobs.

Local initiatives like the Artificial Intelligence Collaboration Centre, the Future Medicines Institute, and the Resilience Medicines Manufacturing Skills Centre demonstrate how interdisciplinary learning, digital fluency, and employer-led training can be delivered at scale.

Drawing on international best practice from hubs such as MaRS in Toronto, and Nashville Health-Tech Bridge, to city-region models in Cardiff, Edinburgh, Manchester, and Glasgow, Northern Ireland has the opportunity to embed innovation-led workforce development and strengthen its position as a global hub for life sciences.

2 Northern Ireland punching well above its weight in health and life sciences (HIRANI) Health Innovation Research Alliance Northern Ireland Available from: https://hira-ni.com/northern-ireland-punching-well-above-its-weight-in-health-and-life-sciences/

3 Statistics vary slightly between Invest NI, the Department for the Economy and HIRANI

A full list of Projects across the four City and Growth Deals can be found by following the links listed:

BRCD Belfast Region City Deal	belfastregioncitydeal.co.uk
CCGGD Causeway Coast and Glens Growth Deal	https://causewaycoastandglens.gov.uk/work/strategic-projects/growth-deal
DSCD Derry and Strabane City Deal	www.derrystrabane.com/citydeal
MSWGD Mid-South-West Growth Deal	midsouthwestregion.org

These City and Growth Deal projects will catalyse innovation in not only the Life and Health Sciences Sector but will run through all identified growth sectors. The city and growth deal projects are fundamental to the success of these Centres; driving the sector forward is a skills eco-system to support Industry needs.

RESPONDING TO CHALLENGES

The assessment identifies several pressing challenges and structural barriers:

- Expanding outreach in schools and communities to inspire under represented groups.
- Strengthening careers advice and guidance to highlight LHS opportunities.
- Investing in teacher CPD to build confidence in digital and life sciences education.
- Increasing opportunities at Levels 2–5 through vocational training and apprenticeships.
- Expand the number of clinical academic training places in Northern Ireland and create clear career pathways to attract and retain clinician-researchers.
- Developing flexible routes for career changers, women returners, older workers, and migrants.
- Creating shared apprenticeship and placement models tailored to SMEs.
- Developing modular, stackable credentials and micro-credentials to support lifelong learning.
- Embedding workplace-based training and employer-led CPD in digital, AI, and regulatory skills.
- Promoting return-to-work and upskilling programmes to address shortages in mid-level roles.
- Embedding AI, data literacy, and digital innovation across all education and training levels.
- Supporting transdisciplinary programmes combining clinical, technical, and commercial skills.
- Addressing ethical, legal, and regulatory issues associated with digital health and AI.
- Providing training in entrepreneurship, business development, and intrapreneurship.
- Building skills for scaling SMEs, managing spinouts, and accessing global markets.
- Strengthening IP, legal, and quality assurance expertise within training provision.
- Co-designing curricula to align with labour market needs.
- Expanding placements, internships, and real-world learning opportunities.
- Ensuring leadership, project management, sustainability, and public/patient involvement are core skills.
- Promoting inclusive recruitment practices and flexible employment models.
- Supporting secure employment, fair contracts, and progression pathways to enhance sector appeal.
- Establishing a cross-sector working group to coordinate delivery and monitor outcomes.

RECOMMENDATIONS AND ACTIONS

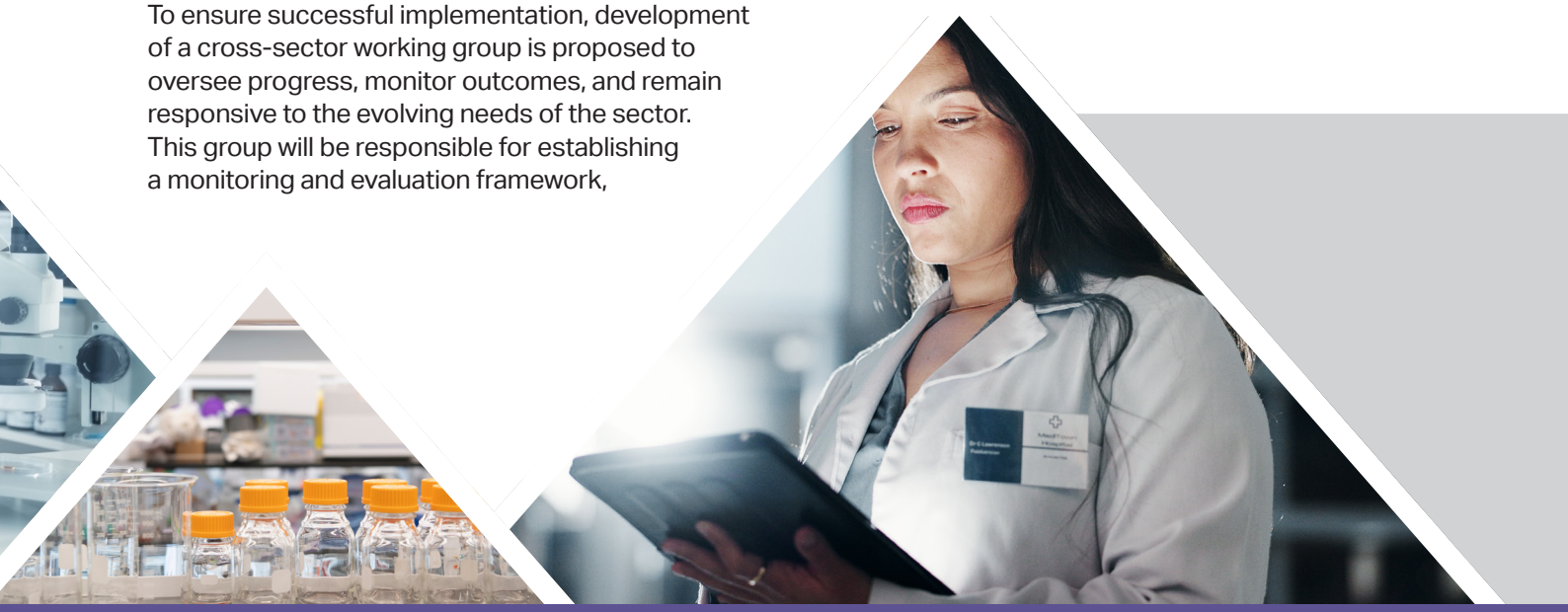
Following consultation across the Task and Finish group and engagement with industry, several proposals have been made, with seven recommendations agreed upon.

High-Level summary of Skills Assessment recommendations

1	Recommendation 1	Enhance early and inclusive STEM engagement
2	Recommendation 2	Expand and diversify entry pathways
3	Recommendation 3	Upskill the existing workforce
4	Recommendation 4	Develop a digitally enabled and interdisciplinary workforce
5	Recommendation 5	Integrate innovation and commercialisation skills
6	Recommendation 6	Strengthen industry-education-academic collaboration
7	Recommendation 7	Embed cross-cutting skills

Implementing these recommendations will enable Northern Ireland to tackle critical skills shortages across the LHS sector, enhance diversity and inclusion by engaging underrepresented groups, and strengthen its position as a global hub for innovation. In turn, this will drive economic growth and deliver better health outcomes for the region.

To ensure successful implementation, development of a cross-sector working group is proposed to oversee progress, monitor outcomes, and remain responsive to the evolving needs of the sector. This group will be responsible for establishing a monitoring and evaluation framework, aligned with international best practice and ensure actions are prioritised; from quick wins to longer-term and more complex initiatives, providing a clear basis for accountability, resource planning, and impact assessment.



RECOMMENDATIONS AND ACTIONS

1 RECOMMENDATION

Enhance early and inclusive STEM engagement

Actions

- Partner with schools, parents and boards to promote LHS careers
- Align with existing STEM programmes (Catalyst, W5, Generation Innovation)
- Target under represented groups, regions, and female / minority pupils
- Develop CPD and awareness programmes for teachers, advisors and parents
- Track progress annually with partners

2 RECOMMENDATION

Expand and diversify entry pathways

Actions

- Scale vocational, foundation and apprenticeship routes (Level 3–7)
- Promote re-entry pathways for career changers and returners
- Create flexible progression routes (skills staircase, top-ups)
- Broaden apprenticeships to MedTech, Biotech, Pharma, Health AI
- Diversify entry routes from Business, Creative and Analytics backgrounds

3 RECOMMENDATION

Upskill the existing workforce

Actions

- Deliver stackable CPD, modular training and emerging tech skills
- Use Living Labs and advanced facilities for hands-on skills training
- Partner with industry for food, pharma and research innovation skills
- Provide regulatory, ethics and global compliance training
- Expand clinical research, trials and medical innovation capacity

4 RECOMMENDATION

Develop a digitally enabled and interdisciplinary workforce

Actions

- Embed AI, data science and digital health and ethics across all levels
- Introduce inter-disciplinary training across clinical, research and regulatory roles
- Create specialist pathways for hybrid roles (for example Health Data Scientist)
- Introduce digital innovation into GCSE, A-level, FE andHE
- Link digital skills training with incubators and spinout ecosystems

5 RECOMMENDATION

Integrate innovation and commercialisation skills

Actions

- Create microcredentials in entrepreneurship, sales and regulatory affairs
- Embed commercialisation modules into UG/PG courses
- Support spinouts, sandbox testing and industry-led projects
- Promote NHS intrapreneurship with training, seed funding and recognition
- Run hackathons and embed health economics into training

6 RECOMMENDATION

Strengthen industry-education-academic collaboration

Actions

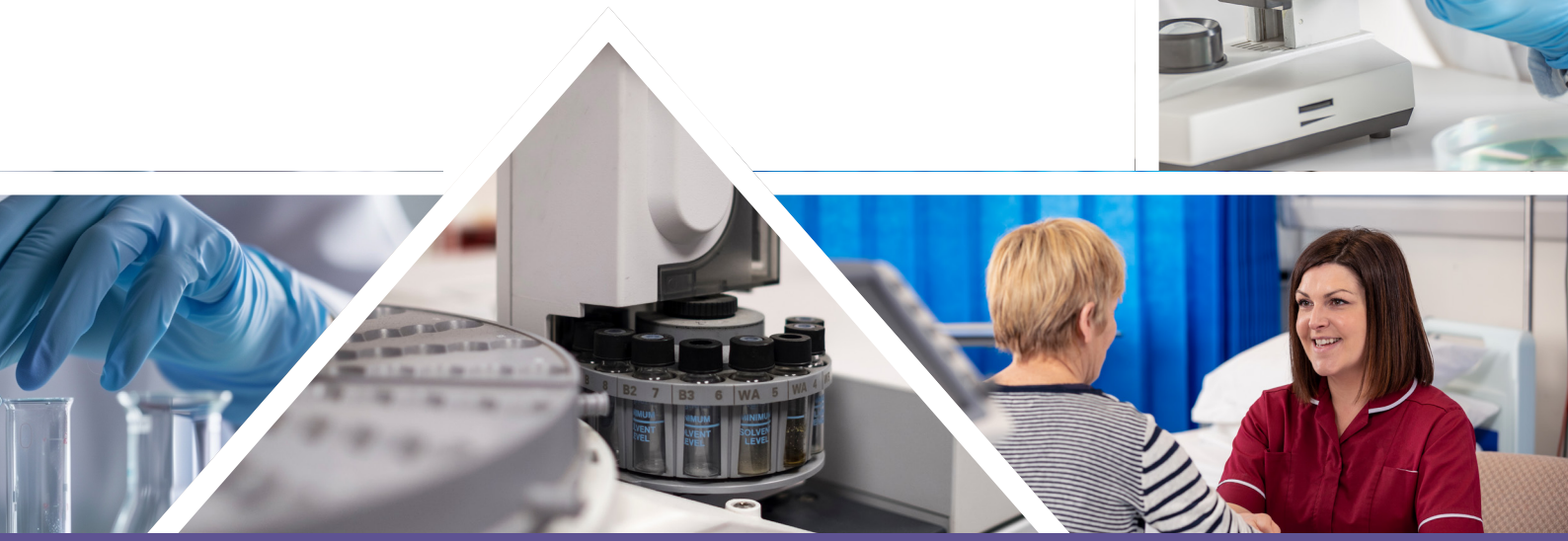
- Co-develop training with employers, HSC and sector bodies
- Enable placements, secondments and industry insight programmes
- Establish joint funding and evaluation frameworks with clear KPIs
- Expand global health skills and international placements
- Encourage clinician engagement in MedTech research and innovation

7 RECOMMENDATION

Embed cross-cutting skills

Actions

- Embed leadership, resilience and emotional intelligence across all levels
- Teach transferable skills (project management, entrepreneurship, regulation)
- Integrate sustainability and SDG literacy into curricula and training
- Embed PPI (Patient and Public Involvement) as a core workforce skill
- Use simulation and reflective practice to strengthen professional skills



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BELFAST REGION CITY DEAL

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Derry Cittie & Stràbane Destrick Cooncil

Grow Causeway Coast & Glens
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MSW Mid South West Economic Engine

Northern Ireland Executive
www.northernireland.gov.uk

UK Government