



Emergency Medicine Workforce
Challenges in Europe:
**A Comprehensive Manual
for Sustainable Emergency Care
in National Healthcare Systems**



Authors & members of the Professional Committee of

EUSEM: Jan Stroobants, Ian Higginson, Paolo Groff, Roberta Petrino, Ruth Brown, John Heyworth, Saïd Laribi, Robert Leach, Jim Connolly, Taj Hassan, Hannelore Raemen, Davi Kaur

Acknowledgments: Ffion Davies, Diyan Ganev, Shweta

Gidwani, Andre Mercieca, Daian-Ionel Popa, Jana Seblova, Katie Willis, Mohammed Aburagheef, Ilenia Mascherona, Dalip Kumar, Danusha Sanchez, Frederic Paris, Allison Gilbert, Francesco Franceschi, Prabakar Vaittinada Ayar, André Gries, Szabolcs Gaal-Marschál, Simon Ranfl, Francesca Innocenti.





Table of Contents

5	Chapter 1: Medical Deserts and Workforce Shortages
7	Chapter 2: Retention of Emergency Medicine Professionals
10	Chapter 3: International Recruitment and Migration
13	Chapter 4: Education and Training in Emergency Medicine
16	Chapter 5: Task Shifting and Skill Mix in Emergency Care
20	Chapter 6: Artificial Intelligence in Emergency Care
23	Conclusion

Introduction

This document has been developed based on recommendations from the **OECD and WHO** concerning the critical issue of healthcare workforce shortages across Europe and globally. The **OECD's 'Health at a Glance Europe 2024' report** identified health workforce challenges as a primary concern for EU health systems over the next decade, noting in 2022 a shortage of 1.2 million doctors, nurses, and midwives in EU countries, exacerbated by the COVID-19 pandemic. Similarly, the **WHO** has highlighted severe global shortages of health personnel and published a Global Code of Practice on the International Recruitment of Health Personnel to address these issues.

This report is a collaborative effort by the **Professional Committee of the European Society for Emergency Medicine (EUSEM)**. Its purpose is to provide specific, actionable insights and recommendations tailored for **Emergency Medicine (EM)**, a critically important area of unplanned care, as generic literature on workforce shortages resulting in medical deserts often lacks an EM-specific focus. Emergency Departments (EDs), serving as the frontline of acute care, are particularly sensitive to these staff shortages. They face a dual impact: not only are they affected by the same workforce deficits as other healthcare sectors, but increased pressures on primary and planned care due to these shortages can also lead to more patients seeking care in EDs, intensifying existing challenges such as overcrowding and operational burden.

This document is intended as a **guidance tool for national Emergency Medicine societies across Europe**. It aims to support them in identifying specific needs and adapting the best strategies for their unique national contexts, facilitating advocacy with their respective governments regarding workforce planning and demand-capacity mismatches. This initiative is officially supported by both the **European Scientific Society for Emergency Medicine (EUSEM)** and the Emergency Medicine section of the overarching **European Union of Medical Specialists (UEMS)**, which defines European Training Requirements for Emergency Medicine and provides a framework for professional development.

Recognising that every new measure requires a thorough assessment of its potential consequences, each thematic recommendation within this document is accompanied by a **SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis**. This analytical approach is crucial for anticipating problems and ensuring that interventions enhance system resilience and effectiveness without compromising the quality or appropriateness of healthcare provision.



Shortage of

1.2 mill.

doctors, nurses,
and midwives



Impact on

Emergency Departments:

Same workforce shortages

Strain on primary & planned care drives
extra demand in EDs

Chapter 1: Medical Deserts and Workforce Shortages

a) Situation Sketch

Medical desertification is broadly defined as the emergence of severely underserved areas where residents face significant barriers to accessing needed health services. The concept typically encompasses geographical distance to healthcare facilities, a shortage of health professionals, and regions with ageing, declining, or disadvantaged populations that struggle to attract and retain medical staff. The World Health Organisation (WHO) defines “underserved areas” as geographical areas with limited access to qualified healthcare providers and quality healthcare services. However, the specific definition varies widely across countries due to differences in geographical characteristics, what constitutes a rural or remote area, and the type of health workforce which is undersupplied (e.g., medical specialists, dentists). This lack of a clear, common definition creates confusion in research and policy decisions.

The root cause of medical desertification is an inadequate healthcare workforce. This inadequacy stems from several principal reasons: a nation’s failure to commit sufficient resources to the education and training of healthcare workers to meet population demands, difficulties in recruitment and retention of healthcare workers in more rural areas within all countries, and the far-reaching international ramifications when countries with national shortages recruit from other nations, often those with already fragile healthcare provisions. The uneven geographical distribution of doctors, with high densities in national capital regions (e.g., Austria, Croatia, Czechia, Denmark, Hungary, Greece, Poland, Portugal, Romania, Slovak Republic), further contributes to medical deserts in peripheral regions. Adverse patient outcomes, including worse survival rates and longer hospital stays, are directly linked to the distance patients live from healthcare facilities.

Three EU-funded projects (ROUTE HWF, OASES, AHEAD) ran between 2021 and 2024 to better understand and address medical desertification. ROUTE HWF identified three distinctive types of medical deserts: those mainly caused by accessibility problems for health workers/facilities, those related to population needs, and those with a cumulation of both demand and supply-side issues. The OASES group described medical desertification as a lack of health professionals, difficulties in attracting new ones, retired professionals not being replaced, or lengthy waiting times and long distances for healthcare access. The WHO’s regional office for Europe considers medical deserts the main health workforce priority for Europe in its 2020–2025 programme of work.

b) Recommendations

Urgent action is required at both European and national healthcare policy levels to address the fundamental problem of healthcare worker shortages. A comprehensive survey of all national Emergency Medicine (EM) societies within EUSEM is needed to develop a reliable evidence base for the specific issues involving emergency care in medical deserts and to support the argument for an increased workforce. This survey should identify areas of shortage, understand their causes, and assess the impact of recruitment by larger, wealthier countries on less-resourced source nations.



Strategies to mitigate medical desertification, as summarised by the OASES group, include:

- **Professional Support:** Focusing on education, adequate remuneration, support for clinician autonomy, leadership support, and collegial support.
- **Changing Care Delivery:** Distributing responsibilities from physicians to nurses, multi-professional care, extended opening hours and walk-in care, and the use of e-health and telemedicine.

- The AHEAD project emphasised reducing health inequalities by achieving better access to health services and more equitable access to health workers. Its goals included:
 - Implementing **telemedicine solutions** and **mobile health units**.
 - **Training local healthcare workers**.
 - **Infrastructure development** to build and sustain facilities in underserved regions.

- **Community education and awareness** to promote health education and preventive care.

While financial incentives have been used to correct geographical maldistribution, the literature indicates they are more effective when combined with other measures.

c) SWOT Analysis of the Recommendations

Strengths:

- **Comprehensive Understanding:** The recommendations stem from a clear recognition of the problem and its multifaceted nature, informed by EU-funded projects and OECD reports.
- **Multi-faceted Approach:** They include interventions spanning professional support, changes in care delivery models, technology integration, and infrastructure development, addressing various aspects of the problem.
- **Focus on Root Causes:** The emphasis on increasing the healthcare workforce through education and addressing recruitment/retention difficulties directly targets the core of medical desertification.
- **Evidence-Based Development:** The call for surveys of national EM societies aims to build a robust evidence base for targeted interventions.



Weaknesses:

- **Lack of Uniform Definition:** The existing variability in defining “medical deserts” across countries could hinder the consistent implementation and measurement of recommended policies.
- **Complexity of Implementation:** Implementing wide-ranging strategies across different national healthcare systems, with varying geographical characteristics and workforce types, presents significant coordination challenges.
- **Limited Efficacy of Single Interventions:** Relying solely on financial incentives, for instance, has been shown to have limited success without complementary measures.



Opportunities:

- **Leveraging Existing Initiatives:** Building upon the insights and methodologies developed by projects like ROUTE HWF, OASES, and AHEAD can accelerate policy design and implementation.
- **Technological Advancement:** E-health, telemedicine, and mobile health units offer significant potential to bridge geographical access gaps and improve service delivery.
- **International Collaboration:** Addressing a problem recognised across Europe and globally fosters opportunities for shared learning, best practices, and collaborative solutions.

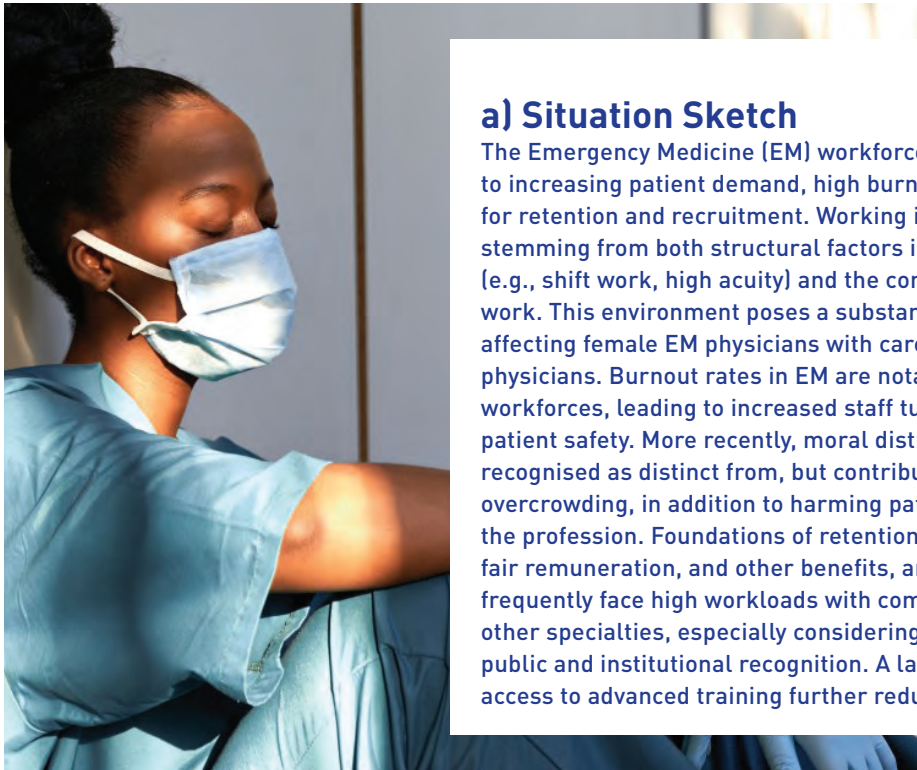


Threats:

- **Persistent Workforce Shortages:** Without sufficient commitment of resources to training and retention, the problem of an inadequate workforce will continue or worsen.
- **International Ramifications:** Uncoordinated national recruitment initiatives risk exacerbating workforce shortages in source countries, undermining global healthcare provision.
- **Inadequate Data and Research:** A lack of specific data on Emergency Medicine issues in medical deserts could lead to less effective, generic interventions.
- **Resistance to Change:** Implementing new models of care delivery or shifting responsibilities may face resistance from traditional professional roles or established practices.



Chapter 2: Retention of Emergency Medicine Professionals



a) Situation Sketch

The Emergency Medicine (EM) workforce globally faces immense pressure due to increasing patient demand, high burnout rates, and insufficient incentives for retention and recruitment. Working in EM carries a significant burden stemming from both structural factors inherent in the Emergency Department (e.g., shift work, high acuity) and the considerable psychosocial burden of the work. This environment poses a substantial barrier to retaining staff, particularly affecting female EM physicians with caregiving responsibilities and older EM physicians. Burnout rates in EM are notably higher compared to other healthcare workforces, leading to increased staff turnover and ultimately impacting patient safety. More recently, moral distress and moral injury have also been recognised as distinct from, but contributing factors to, retention difficulties. ED overcrowding, in addition to harming patients, directly contributes to staff leaving the profession. Foundations of retention, such as reasonable working conditions, fair remuneration, and other benefits, are often unmet. EM professionals frequently face high workloads with comparatively lower remuneration than other specialties, especially considering night and shift work, and often lack public and institutional recognition. A lack of clear career pathways and limited access to advanced training further reduces long-term engagement.

b) Recommendations

Building a sustainable emergency medical workforce requires a multi-pronged approach that includes improved working conditions, long-term workforce planning, adequate financial support, meaningful professional development, and mental health safeguards.

1. Recommendations for Governments:

• National Workforce Planning and Retention Strategies:

Introduce national EM workforce strategies to project future needs and guide training investments, develop national staffing guidelines based on patient volume and acuity, consider mandatory service contracts with incentives for rural/underserved areas, and ensure long-term employment contracts and stable career prospects. Implement migration retention policies to prevent “brain drain” from developing nations.

• **Public Awareness and Professional Recognition:** Use national campaigns to increase public appreciation of EM professionals, include public engagement initiatives to humanise and support frontline workers, include EM in leadership roles within health ministries, and ensure recognition awards for exemplary service.

• **Financial Incentives and Compensation:** Offer competitive salaries aligned with workload intensity and unsociable hours, provide bonuses for night shifts, holidays, and high-volume centres, offer loan forgiveness/repayment programmes for EM service in underserved areas, and provide tax incentives for EM practitioners. Ensure the right to take relevant sabbaticals and return.

• **Training and Career Development:** Introduce a joined-up approach to trainee recruitment, subsidise EM residency

programmes (especially in low- and middle-income countries), provide flexible options for trainees to move between programmes/geographical areas, offer opportunities for subspecialisation, attribute merit for relevant experience for doctors transferring specialties, build CME funding and conference allowances into remuneration, and support clear advancement tracks. Fund retainer schemes for EM doctors returning from leave.

• **Mental Health and Wellbeing Support:** Introduce government-funded wellness programs and counselling services, implement policies encouraging flexible scheduling, develop rotational schemes between high and lower acuity centres, and encourage a culture of openness around mental health.

2. Recommendations for National Societies:

• Develop a detailed understanding of workforce requirements and factors supporting retention within their nations.

• Work collaboratively with other societies to understand shared challenges and provide a global picture of the EM workforce.

• Engage in active advocacy with governments regarding workforce planning, demand-capacity mismatch, ED crowding, and terms and conditions.

• Engage the media to raise EM’s profile and emphasise its importance.

• Set standards and produce guidance for sustainable working and retention, create tool-kits for leaders/members, and share best practices.



- Advocate for and describe clear career progression pathways and frameworks.
- Support lifelong professional development opportunities for their membership.

3. Recommendations for Hospital Managers and Departmental Leaders:

- **Leadership Style and Communication:** Cultivate psychological safety, inclusivity, and open communication; treat employees as valued team members; encourage collaborative problem-solving; foster trust and mutual understanding; pay attention to team building, positive feedback, and recognition; implement recognition and reward systems; aim for a civil, inclusive culture with anti-stigmatisation programmes; and establish clear standards for inter-departmental consultation and cooperation.
 - **Working Environment:** Provide adequate changing/rest/shower areas, appropriate uniforms, designated comfortable spaces for rest with food facilities, access to healthy snacks/meals, a safe workplace, and availability of medical supplies, PPE, and IT support.
 - **Staffing:** Ensure adequate staffing levels and reduce overtime, ensure sustainable rotas with protected rest time, support flexible work arrangements, provide targeted support for employees with children/elderly family members, use real-time data to monitor workload, and employ advanced practice providers, auxiliary, and administrative staff to reduce clinician workload.
 - **Financial and Non-Financial Incentives:** Offer competitive salaries, rewards, and bonuses; provide non-financial benefits like additional leave or wellness programmes.
 - **Wellbeing and Psychological Support:** Implement preventive strategies for burnout and PTSD, ensure access to supervision and peer support, consider debriefs after difficult events (e.g., TRIM procedures), introduce multidisciplinary Schwarz rounds, provide professional counselling services, and develop destigmatisation programmes.
 - **Education and Professional Development:** Support new residents with dedicated supervisors, promote continuing medical education and conference attendance, offer regular training in non-technical skills (including inter-professional simulation), provide major incident practice, ensure mutual recognition of qualifications and skills: with the development of a core competence model for nurses and doctors, movement precipitated by personal circumstances or external factors must be supported across European countries. Clear skill definitions with learning certification should facilitate seamless transfer and mitigate workforce shortages. and research, and develop leaders through formal training, fellowships, and mentorship programmes.
- ### 4. Tips for Individual Staff:
- **Individual Wellbeing (PERMAH/PERMA+ Model):** Focus on Positive Emotion (e.g., gratitude journaling), Engagement (using character strengths), Relationships (active-constructive responding), Meaning (meaning-making reflection), Accomplishment (goal-setting and visualisation), and Health (mindfulness, diet and exercise).

- **Resilience:** Understand factors underpinning resilience, such as Thinking patterns, Emotional intelligence, Leisure, Energy (sleep, hydration, exercise, diet), Growth mindset, Relationships, Attitude (self-efficacy, adaptability, determination, acceptance), and Meaningful purpose. Key psychological drivers include emotional regulation, optimism, cognitive agility, self-compassion, and self-efficacy.
- **Preventative Skills during Work:** Practice compassion (shifting from empathy to intention to act), improve communication (deep-listening, Appreciative Inquiry), and use self-regulation techniques (deep breathing, mindful breathing, progressive muscle relaxation). Adopt trauma-informed behaviours (briefing teams, rotating roles, task-oriented approaches, blame-free environment, psychologically-safe debriefs).

c) SWOT Analysis of the Recommendations

Strengths:

- **Holistic Approach:** The recommendations provide a multi-level, comprehensive framework addressing retention from governmental policy to individual coping strategies.
- **Focus on Core Needs:** They align with fundamental human psychological principles by addressing basic needs (conditions, pay) before higher-level needs (autonomy, belonging, contribution, growth).
- **Addresses Burnout Directly:** Specific interventions for mental health and wellbeing, including support programmes and cultural shifts, directly target a major cause of attrition.
- **Empowerment at All Levels:** Recommendations empower governments, professional societies, hospital leaders, and individuals to take active roles in improving retention.



Weaknesses:

- **Significant Resource Investment:** Many recommendations, especially those involving financial incentives, expanded training, and infrastructure improvements, require substantial financial commitment from governments and hospitals.
- **Cultural and Administrative Shifts:** Implementing changes in leadership styles, inter-departmental cooperation, and destigmatisation programmes requires significant cultural and administrative shifts that can be challenging and slow.
- **Dependence on Political Will:** The effectiveness of government-led strategies is highly dependent on sustained political will and long-term commitment.
- **Individual Variability:** While individual tips are valuable, their effectiveness can vary greatly depending on personal circumstances and the severity of systemic stressors.



Opportunities:

- **Improved Patient Outcomes:** Better retention through enhanced working conditions and staff wellbeing is directly linked to improved patient safety and quality of care.
- **Reduced cost:** It is cheaper to retain experienced staff than to recruit and train new colleagues.
- **Enhanced System Resilience:** A stable, well-supported EM workforce contributes significantly to the overall resilience of the healthcare system, enabling better responses to crises.
- **Innovation in Care Delivery:** Encouraging academic careers, leadership development, and inter-professional learning can foster innovation within EM.
- **Attracting New Talent:** Addressing burnout and improving conditions can make EM a more attractive career choice, aiding recruitment alongside retention.



Threats:

- **Ongoing Overcrowding and Workload:** Persistent ED overcrowding and high workloads can undermine even the best retention strategies, perpetuating burnout and staff turnover.
- **Fragmented Systems and Short-Term Contracts:** Fragmented healthcare systems and reliance on short-term contracts discourage continuity and long-term engagement, counteracting retention efforts.
- **Competition from Other Specialties/Countries:** If EM conditions do not improve sufficiently, professionals may seek opportunities in less demanding specialties or countries with better compensation and working environments.
- **Lack of Recognition:** Continued lack of public and institutional recognition can demoralise staff and reduce the perceived value of an EM career.



Chapter 3: International Recruitment and Migration

a) Situation Sketch

The free movement of workers within the European Union (EU), facilitated by Directive 2005/36/EC on the recognition of professional qualifications, has increased cross-border mobility for healthcare professionals, including in Emergency Medicine (EM). However, not all European countries have yet introduced EM as a recognised specialty (e.g., Germany, Austria, Greece, Switzerland), restricting specialist mobility and leading to significant shortages and competence gaps. Outside Europe, international migration has become a key strategy to address EM labour shortages, with skilled workers from non-EU countries (e.g., North Africa, the Middle East, South Asia) increasingly recruited, particularly for rural or underserved areas. This migration is often driven by complex socio-political factors, including economic inequalities, conflict, and educational opportunities.

Europe faces critical workforce deficits; in 2022, the EU had a shortage of approximately 1.2 million doctors, nurses, and midwives. The World Health Organisation (WHO) projects that by 2030, Europe could face a deficit of up to 4 million health workers, including 600,000 doctors and 2.3 million nurses. Contributing factors include an ageing workforce (over one-third of EU doctors were over 55 in 2022, with some countries reporting over half), increased demand for healthcare services due to ageing populations and chronic diseases, and the exacerbating impact of the COVID-19 pandemic, which led to increased workloads, burnout, and staff leaving the profession. Geographic and specialty imbalances further necessitate targeted international recruitment.

Healthcare workers migrate for various reasons, driven by “push” factors from their home countries and “pull” factors in destination countries. Key motivations include:

- **Working Conditions:** Stressful EM environments can drive professionals to countries with better hospital infrastructure and staff-to-patient ratios, as well as better working hours, shift patterns, and support staff availability.
- **Safety and Life Conditions:** Political stability, personal security, quality of life, and access to good housing and education for families are crucial motivators, with Western European countries often offering more attractive conditions.
- **Economic Opportunities:** Higher salaries and better benefits in European countries make migration financially attractive, especially compared to low- and middle-income countries.
- **Professional Opportunities:** The desire to work in advanced medical systems, access cutting-edge technology, participate in innovative research, and pursue structured career paths and specialisation attracts professionals to better-funded healthcare systems.
- **Training Opportunities:** Access to high-quality postgraduate education, continuing professional development (CPD), and international conferences/journals are strong motivators.
- **Personal Aspirations:** Opportunities for family education and overall quality of life play a significant role.

The migration of medical staff has significant consequences for source countries, particularly those with already fragile healthcare provisions. This “brain drain” means they lose qualified personnel, severely impacting their ability to maintain healthcare provision. For example, Romania saw over 9,000 physicians leave between 2007-2010, and Greece experienced a “mass exodus” due to unemployment, job insecurity, income reduction, over-taxation, and limited research budgets. Physicians from Africa are particularly attracted to higher wages and lower doctor density in destination countries, while Asian doctors prioritise better school systems. Post-Brexit, the UK’s NHS has become increasingly dependent on doctors and nurses from “red list” countries (those with critical shortages identified by WHO), raising ethical concerns about exacerbating their health system vulnerabilities.



WHO projects that by

2030

Europe could face a deficit of up to

4 mill.

health workers

including

600.000



2.3 mill.



Contributing factors include:

More than **1/3**

of EU doctors were

over **55** in 2022



Increased demand for healthcare services (due to ageing populations and chronic diseases)



Impact of COVID-19 (workloads, burnout, staff leaving the profession).

b) Recommendations

To manage healthcare worker migration effectively while granting healthcare service quality in both source and destination countries, several strategies are proposed:

- **Ethical International Recruitment:** Establish and enforce recruitment policies in line with the WHO Global Code of Practice on the International Recruitment of Health Personnel. This code discourages active recruitment from developing countries facing critical shortages (classified as “red list” countries) unless specific government-to-government agreements are in place. Recruitment from “amber list” countries is managed by agreement, while “green list” countries allow active recruitment.
- **Improve Working Conditions and Compensation:** Address issues such as workload, work-life balance, and salary differentials in destination countries to attract and retain EM professionals sustainably.
- **Invest in Education and Training:** Increase domestic training programmes and provide opportunities for continuous professional development to reduce long-term dependence on international recruitment.
- **Simplify Qualification Recognition:** Streamline the process for recognising foreign qualifications to facilitate the integration of skilled EM professionals into new healthcare systems.
- **Provide Integration Support:** Offer language training, cultural orientation, and career support to help migrant EM professionals adapt to their new working environment.
- **Enhance Data Collection and Monitoring:** Improve the collection and analysis of data on EM professional migration to support informed policy development and workforce planning.
- **Promote International Cooperation:** Encourage collaboration between European countries and source countries to address labour shortages and share best practices in recruitment and retention. The WHO Code encourages collaboration so both derive benefits from international migration.
- **Long-term Workforce Planning:** Develop comprehensive workforce strategies that balance domestic supply with international recruitment. Countries should implement effective health workforce planning, education, training, and retention strategies to sustain a workforce appropriate for their specific conditions and reduce the need for migrant health personnel.



c) SWOT Analysis of the Recommendations

Strengths:

- **Workforce Support:** International recruitment effectively alleviates immediate staff shortages in EM, ensuring hospitals can meet patient needs.
- **Diversity and Knowledge Exchange:** Foreign healthcare professionals bring diverse expertise, cultural competence, and new perspectives, enhancing the quality of emergency care.
- **Improved Healthcare Delivery:** A broader talent pool allows healthcare facilities to provide better emergency care, specialised care, and innovative treatment strategies.
- **Ethical Framework:** Adherence to the WHO Global Code of Practice provides an ethical basis for recruitment, promoting fair and transparent processes and reducing exploitation.



Weaknesses:

- **Brain Drain from Countries of Origin:** Recruiting from countries with existing critical shortages can severely impact their own healthcare systems, creating ethical dilemmas.
- **Cultural and Language Barriers:** Adaptation difficulties, including language proficiency and differences in medical practice, can affect communication and efficiency of patient care for migrant professionals and their colleagues.
- **Long Integration Time:** Foreign employees may need additional time and training to familiarise themselves with local healthcare protocols, regulations, and hospital procedures.
- **Unsustainability:** The strategy of recruiting health workers from abroad risks exacerbating shortages in countries of origin and may not be sustainable in the long run.



Opportunities:

- **International Cooperation and Training:** Recruitment programmes can foster partnerships between countries, leading to improved medical training and knowledge sharing initiatives.
- **Standardisation of Practices:** The presence of international experts can drive the development of uniform clinical guidelines across Europe, ensuring more consistent emergency care.
- **Improved Career Pathways:** Foreign professionals can benefit from specialised training, research opportunities, and career development programmes potentially unavailable in their home countries.
- **Remittances:** Migration can generate significant remittances sent back to home countries by migrant workers, potentially associated with a decline in poverty for their families.



Threats:

- **Ethical Concerns in Recruitment Practices:** Some institutions may exploit foreign healthcare workers by offering lower wages or limited advancement opportunities, undermining ethical standards.
- **Labor Instability in Source Countries:** Large-scale migration of EM professionals can weaken the healthcare infrastructure in the countries they leave behind.
- **Economic and Political Uncertainty:** Changes in immigration laws, healthcare budgets, and the political climate can affect the availability and sustainability of international labour recruitment.
- **Increasing Inequitable Access:** The movement of healthcare personnel can result in increasingly inequitable access to healthcare, particularly for countries with vulnerable health systems.



Chapter 4: Education and Training in Emergency Medicine

a) Situation Sketch

Urgent action is needed to address health workforce shortages in Europe, with increasing education and training opportunities for new doctors and nurses being a key recommendation. Emergency Departments (EDs) are highly complex environments characterised by varying workload and constant, changing demands on staff. Patients often present in critical conditions without warning and with extensive co-morbidities. Current pressures on services, including overcrowding, add significant dimensions of pressure and decision-making, requiring prioritisation and “least-worst” options. Training for and within this environment is complex and requires specific, focused attention.

There are several specialty-specific educational challenges in Emergency Medicine across Europe:

- **Wide Inconsistency:** Significant variability exists across Europe in the scope and delivery of EM education.
- **Lack of Protected Learning Time:** There is a current failure to establish protected time for learning for the entire workforce, including supervised learning and feedback in clinical areas, as well as protected time for teachers/faculty.
- **Ambiguous Role Definitions:** A lack of agreed role definitions and consistency across the multi-professional workforce in emergency care leads to ambiguity regarding the learning and skills required for each profession within the team.
- **Curriculum Focus:** Training traditionally focuses on the breadth of the clinical curriculum rather than allowing iterative and incremental learning on core topics and building breadth with experience.
- **Non-Technical Skills Gap:** Training has not traditionally recognised the need to develop non-technical skills essential for productive team working, collaboration, critical thinking, and decision-making in complex environments with undifferentiated patients.
- **Digital and AI Training Deficit:** There is a current lack of explicit training to harness digital advances and Artificial Intelligence (AI) to improve productivity and maximise care delivery.



b) Recommendations

To address workforce shortages through education and training in Emergency Medicine, a series of interventions is proposed:

General Recommendations (from OECD):

- **Expand Training Capacity:** Increase education and training opportunities for new doctors and nurses with a focus on in-service training and educator capacity .
- **Improve Working Conditions:** Ensure access to continuing professional development for workers.
- **Appropriate Workforce Planning:** Match training capacity to service needs with sufficient data to support long-term educational requirements.
- **Use of Technology:** Maximise learning opportunities and worker productivity through technology.

Specialty-Specific Educational Interventions:

- **Standardised Definitions:** Define and accept a European definition of Emergency Physician and Nurse at various stages of skills development (competent, proficient, expert). The European Training Requirement for Emergency Medicine, defining progression from novice to expert doctor, should be adopted/ adapted. A similar European EM nursing training requirement should be developed, including enhanced and advanced practice roles. Education should focus on delivering the competent worker rapidly (within 2 years) to enable workforce expansion.
- **Competency-Based Training:** Europe should adopt a model of competency-based training rather than time in role. This requires identifying appropriate time for educators to support and evaluate learners in clinical areas, avoiding wasted time for rapid learners while allowing more time for others. This requires workplace-based assessment processes and widely acknowledged certification across Europe.
- **Engage with Technology:** Provide support for technology to deliver theoretical learning and engage learners to maximise benefit. AI can facilitate person-specific assessment of competence, gap analysis, and focused education. Digital platforms can provide “just-in-time” refreshers on hot topics, identified by gap analysis or changing demographics/case mix, across Europe.
- **Tiered Learning Structure:** Implement a tiered learning progression from core to expert. This can be delivered through European-wide case-based learning workshops supported by local hands-on training for common presentations. As learners progress, less common presentations, complex co-morbidities, advanced procedural skills, and team-based learning will be added, culminating in high-fidelity training, non-technical skills

development, and educational skills for learners.

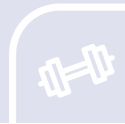
- **Modular Approach:** Utilise technology and big data (e.g., from the European EM data project within EUSEM) to determine required competencies based on local case mix, population demographics, and healthcare system setup. This allows targeted education, such as major trauma modules in relevant units or frail elderly patient care. Digital recording of individual progress, accessible at a unit level, will ensure optimised education for local needs.
- **Accessible Short Learning Elements:** Design educational activities to be accessible at the point of care and for focused, limited time. Open-access, bite-sized (e.g., 10-minute) modules covering core competencies should be available on a Europe-wide platform with translations, case-based content, and learning confirmation.
- **Flexibility in Training:** A modular approach and accessible short learning episodes support flexibility, potentially allowing doctors and nurses from other disciplines to support ED workforce shortages by demonstrating competence in core areas.
- **Multi-professional Workforce Development:** Teams who work together should learn together whenever possible. Learning with and about other professions fosters better team performance, shared work, and mitigates shortages.
- **Develop and Value Educators:** Create a learning environment where the workforce thrives by training and recognising expert clinicians as educators. Educators need access to a community of practice. A common European developmental programme defining base skills for educators is needed to support “in situ” learning.



c) SWOT Analysis of the Recommendations

Strengths:

- **Standardisation and Clarity:** Developing Europe-wide standards and definitions for competent to expert nurses and doctors brings clarity and supports free movement.
- **Efficiency and Speed:** The simplified approach with agreed competencies, modular content, and bite-sized learning allows for rapid acquisition of basic skills and efficient training delivery.
- **Tailored Learning:** The modular approach allows for local adjustment according to specific needs, case mix, and healthcare system setup, optimising educational effort.
- **Team-Oriented Development:** Emphasising multi-professional learning and non-technical skills promotes better team performance and shared workload.
- **Leveraging Technology:** Integration of AI for personalised assessment and digital platforms for “just-in-time” refreshers maximises learning opportunities and ensures staff competence.



Weaknesses:

- **Public Perception:** The concept that not every clinician in an Emergency Department is an “expert” might face an uncertain public response.
- **Development of Materials:** Depends on rapidly developing high-quality, standardised educational material across Europe.
- **Resource Demands:** Significant resources are needed to support protected time for educators and learners.



Opportunities:

- **Workforce Flexibility:** Allows clinicians from other specialties to contribute to EM care, providing flexibility during fluctuations in demand.
- **Consistent Standards:** Ensures a common standard across Europe, particularly for non-technical skills, improving overall quality of care.
- **Enhanced Teamwork:** Explicitly emphasises the importance of team working in emergency care, leading to better collaboration and mitigation against shortages.
- **Career Progression:** Provides clearer pathways for professional development and expertise, potentially improving retention.



Threats:

- **Technological Access:** The effectiveness of technology-driven learning is threatened if widespread access to necessary digital infrastructure is not available.
- **Agreement Difficulties:** Reaching pan-European agreement on core competencies for doctors and nurses might be challenging due to differing national regulations and traditions.
- **Funding Shortages:** Lack of sufficient funding for educators' time and for general learning activities could undermine the entire strategy.
- **Educator Burnout:** Without proper support and recognition, educators themselves might face burnout, limiting their capacity to train the next generation.

Chapter 5: Task Shifting and Skill Mix in Emergency Care

a) Situation Sketch

The COVID-19 pandemic exposed significant vulnerabilities in European health systems, particularly highlighting the critical shortage of healthcare workers, which is now considered the greatest challenge to health systems. In 2022, EU countries faced a shortage of 1.2 million doctors, nurses, and midwives. This crisis is compounded by a “double demographic phenomenon”: an ageing general population, leading to increased demand for healthcare services (especially for chronic conditions), alongside an ageing healthcare workforce with large numbers nearing retirement. This creates a vicious circle where understaffing leads to stressful working conditions, increased resignations, and reduced attractiveness of healthcare professions.

To counter this trend, interventions affecting workforce supply (education, working conditions, migration, retirement policies) and demand (more effective use of the workforce, digital technologies) are being explored. Task shifting, in its simplest form, is the delegation of tasks from one healthcare professional category to another. However, the modern concept is broader, encompassing:



Enhancement: Extending the role or skills of a specific group of workers.



Substitution/Delegation: Moving tasks between professional categories, breaking traditional divides.



Innovation: Creating new jobs by introducing new types of workers or technology.

Crucially, task shifting is now seen as bidirectional; skills may move to a less specialised category or require someone with higher skills than at present. Therefore, “skill mix” is a more accurate term. The concept also extends to involving people outside professional healthcare roles, including patients, and integrating technologies. The overarching aim is to reorganise existing human resources efficiently to improve workload distribution, increase service capacity, and reduce healthcare costs. This strengthens health system resilience, efficacy, effectiveness, and patient experience/autonomy.

However, task shifting can have complex consequences:



Hierarchical Subversion: Transferring functions traditionally performed by physicians to nurses (physician–nurse task shifting) can lead to shifts not only in skills but also in workload, social power, or economic gain, potentially subverting traditional hierarchies.



Training and Regulation: It necessitates foreseeing and regulating the necessary training process for skill transfer.



Legal Disputes: Depending on national legislation and professional competence boundaries, changes can lead to legal disputes, sometimes involving professional associations.



Quality Concerns: Task shifting must never imply a reduction in the quality or appropriateness of healthcare provision, which is a major challenge.



Perceived Impoverishment: Given that shortages affect all major categories (doctors, nurses, midwives), task shifting could be perceived as further impoverishing one category to benefit others, rather than an optimisation.

While task shifting has been explored in primary care for chronic disease management with comparable or superior results from nursing management, its application in the emergency-urgency context is more difficult. Here, nursing actions primarily support and supplement medical ones. However, the Advanced Nurse Practitioner (ANP) programmes demonstrate success in Emergency Departments, with ANPs autonomously managing minor trauma or low-intensity illnesses within defined protocols, including prescribing drugs and ordering tests. Audits have shown ANP performance comparable or superior to medical counterparts in terms of X-ray diagnoses, pain management, and waiting times. ANPs improve metrics such as length of stay and wait times, and patients express satisfaction. In the pre-hospital setting, substantial heterogeneity exists, with some countries using paramedics for advanced life support and others requiring doctors and nurses together. Freeing up physicians through task shifting in pre-hospital care can offer an organisational advantage.

b) Recommendations

The working group proposes the following areas to be developed, further investigated, and potentially standardised for task shifting/skill mix in Emergency Medicine:

1. Pre-hospital Emergency Setting:

- **Recommendation:** Expert nurses (with standardised definitions of “expert”) could manage specific conditions in the field under well-defined protocols, supported by real-time physician consultations (video-calls, structured decision trees). They should be qualified for advanced life support, airway management, and administration of life-saving drugs.
- **Pros:** Enhances resource efficiency by minimising the need for doctor-led response teams for every situation; many extra-hospital territories are already more covered by nurses than doctors.
- **Cons:** Legal constraints and professional issues to overcome; requires long-term, centralised, and expensive nurse training; difficulty in uniform procedure application in diverse terrains; need for economic adjustment for increased nurse responsibilities.

2. Triage See and Treat:

- **Recommendation:** An experienced nurse could manage low-intensity medications (pharmacological/non-pharmacological within protocols), minor limb injuries (allowing X-ray requests), with immediate doctor activation if needed. Structured workflow should defer non-urgent patients to outpatient clinics.
- **Pros:** Frees up doctors for other activities; better overcrowding management; enhances efficiency by allowing immediate treatment; improves patient outcomes through earlier intervention; offers career development and job satisfaction for nurses; enhances nurse-doctor collaboration.
- **Cons:** Nurses’ reluctance to assume prescribing roles where not previously done; need for economic adjustment; concerns from radiologists/specialists about nurse referrals; patient acceptance

of non-medical prescriptions; variability in EU regulations; substantial investment in nurse training.

3. Fast Track:

- **Recommendation:** An experienced and suitably trained nurse or other clinician could directly refer patients with minor limb trauma to radiology and orthopaedics. Similarly, patients with minor ENT, ophthalmology, or dermatology complaints could be referred directly to the appropriate specialists. For patients requiring hospitalisation but not in need of urgent medical intervention, a nurse-led fast-track system could promptly initiate diagnostic workup, thereby preventing unnecessary delays..
- **Pros:** Reduces ED congestion; speeds up inpatient admissions and workups; improves patient flow.
- **Cons:** Requires restructuring triage and resource allocation; potential for incorrect triage leading to inappropriate fast-tracking.

4. Pain Management at Triage:

- **Recommendation:** An expert nurse, after patient evaluation and red flag exclusion, could manage pain using a well-defined pharmacological protocol. Nurses should also manage IV infusions for dehydration, initiate antihypertensive medications for crises ??, and perform minor procedures like urinary catheter changes.
- **Pros/Cons:** Same as Triage See and Treat.

5. Longitudinal Check-ups (Post-Discharge):

- **Recommendation:** Experienced nurses could perform follow-ups (e.g., medication adherence), enhanced with AI-driven tools such as structured questionnaires or decision-support systems to guide follow-ups and flag cases needing intervention. Patient-provided tools (websites, apps, wearables) could focus follow-ups on those who truly need it.

- **Pros:** Frees up doctors; better protection for discharged patients; greater propensity to discharge patients who can be followed up; reduction in hospitalisations; better overcrowding management.
- **Cons:** Difficulty accepting check-ups as pertaining to the ED; removal of nurses from routine activity under workforce constraints; disparities if patients lack access to/are reluctant to use digital tools; significant upfront investment in AI/monitoring systems.

6. Bed Management and Protected Discharges:

- **Recommendation:** Nurses could manage bed allocation from the ED to hospital wards, helping resolve disputes over bed availability. A similar function involves nurses responsible for protected discharges, facilitating discharge of frail or difficult-to-discharge patients, freeing doctors from time-consuming tasks.
- **Pros:** Physicians concentrate on medical assessments; facilitates seamless transfers; encourages collaboration; minimises unnecessary hospital stays, reducing healthcare expenses.
- **Cons:** Removes nurses from routine activity under workforce constraints; difficulties establishing uniform nursing-led bed management in decentralised administrations; potential legal issues concerning liability for complications after discharge.

7. AI-Integrated Diagnostic Unit at ED Entry:

- **Recommendation:** Implement automated diagnostic pathways at ED entry, including symptom/complaint-based units, early automatic initiation of diagnostics (X-rays, blood work, ECG), and AI-assisted decision support for high-risk patients.
- **Pros:** Speeds up diagnostics, reducing wait times; reduces physician administrative burden; ensures early intervention for high-risk patients; potential long-term financial advantages.
- **Cons:** High initial cost for AI and automated units; requires seamless integration with existing IT systems; potential staff resistance.

8. Palliative Care and Geriatric Sections in EM:

- **Recommendation:** Dedicate specific areas within EDs for patients with end-stage chronic diseases or palliative care patients. These sections would be managed directly by geriatricians, palliative doctors, and specifically trained healthcare personnel.
- **Pros:** Frees up staff to treat emergent patients; patients receive specialised care; less patients per physician; improved understanding of disease for patients and families.
- **Cons:** Requires reorganisation of EDs and hospitals; needs a new triage system.

9. Keeping Patients at Home (AI & Smart Monitoring):

- **Recommendation:** Reduce avoidable ED visits through technology-driven solutions: AI-driven symptom checkers/triage tools, smart home monitoring devices, direct referral pathways to telemedicine/primary care, and virtual consultation lines for nursing homes.
- **Pros:** Reduces ED congestion and unnecessary ambulance use; empowers patients; improves primary care referral efficiency; assists ageing populations/patients in rural/underserved regions.

- **Cons:** Requires investment in AI/remote monitoring; human judgment may not be entirely supplanted by AI; cybersecurity and GDPR concerns; provider scepticism.

10. Prioritising Hospital Beds for Acute Cases:

- **Recommendation:** Hospital beds should be primarily reserved for acute cases and patients whose conditions cannot be managed at home via telemedicine, primary care, nursing homes, or palliative facilities.
- **Pros:** Frees up hospital capacity for acute cases; reduces unnecessary admissions/costs; encourages better outpatient/community care integration.
- **Cons:** Requires significant investment in primary care/home monitoring; may face resistance from patients/families; potential for mismanagement if outpatient resources are inadequate.

11. Matrix Departments:

- **Recommendation:** Implement flexible departments allowing shared bed management across specialties, reducing bottlenecks and enabling dynamic response to shortages.
- **Pros:** Increases flexibility in bed allocation; reduces bottlenecks; more efficient resource use.
- **Cons:** Requires major administrative/cultural shifts; complex coordination; potential conflicts over patient responsibility.

12. Strengthening Primary & Secondary Prevention:

- **Recommendation:** Embed ED referral pathways to prevention programmes; equip home-care nurses with decision-support tools for remote chronic disease management; use digital health coaching to reduce repeat visits.
- **Pros:** Reduces readmissions and chronic disease burden; enhances patient education/self-care; strengthens long-term healthcare sustainability.
- **Cons:** Requires coordination between EDs/community health services; implementation challenges in fragmented systems; initial stakeholder resistance.

c) SWOT Analysis of the Recommendations

Strengths:

- **Reduced ED Congestion:** By optimising patient flow and managing minor cases or specific functions more efficiently, task shifting can significantly alleviate overcrowding in Emergency Departments.
- **Improved Workforce Efficiency:** Reorganising human resources and leveraging skills across different professional categories leads to a more efficient use of the existing workforce.
- **Enhanced Patient Self-Management:** Strategies such as keeping patients at home with AI and smart monitoring empower individuals to manage minor issues, reducing avoidable ED visits.
- **Increased Service Capacity:** By delegating tasks or enhancing roles, the healthcare system can serve more patients and improve access to care.



Weaknesses:

- **Resistance from Traditional Physician Roles:** Shifting tasks may encounter resistance from physicians accustomed to traditional roles, viewing it as a dilution of their responsibilities or a threat to their professional boundaries.
- **Need for Significant Nurse Training:** Expanding nurse roles (e.g., ANPs, pre-hospital nurses) requires substantial, long-term, and potentially expensive training programmes.
- **AI Implementation Costs & Ethical Concerns:** Integrating AI tools for diagnostics or patient monitoring involves high initial costs and raises ethical concerns regarding accuracy, data privacy, and potential over-reliance.
- **Legal and Regulatory Hurdles:** Differences in legislation regarding professional competence boundaries across countries can lead to legal disputes and hinder consistent implementation.



Opportunities:

- **Automation through AI:** AI can automate administrative tasks such as documentation, coding, and initial diagnostics, freeing up clinicians for direct patient care.
- **Expanded Access via Telemedicine:** Telemedicine and virtual consultations can broaden access to care, particularly for remote areas or less acute conditions, reducing ED strain.
- **Data-Driven Triage:** AI and data analytics can enhance the accuracy and efficiency of patient prioritisation and resource allocation in triage.
- **Enhanced Inter-professional Collaboration:** When properly implemented with support and training, task shifting can foster greater collaboration and teamwork among different healthcare professions.

Threats:

- **Risk of Quality Degradation:** Implementing task shifting without proper quality safeguards, training, and continuous monitoring could lead to a reduction in the quality or appropriateness of healthcare provision.
- **Uneven Implementation Across EU Countries:** Due to varying legislative frameworks, cultural norms, and resource availability, task shifting initiatives may be unevenly implemented across European countries, leading to disparities.
- **Over-reliance on Technology:** An excessive dependence on technology (e.g., AI, smart monitoring) without adequate human oversight could lead to mistakes, reduced clinical judgment, or create equity gaps for those lacking access.
- **Resistance from Patients and Other Specialists:** Patients might be reluctant to accept care or prescriptions from non-medical professionals, and other specialists might resist accepting referrals from nurses.



Chapter 6: Artificial Intelligence in Emergency Care

a) Situation Sketch

Artificial Intelligence (AI) is increasingly being applied in medicine to support clinical decision-making and automate routine processes that contribute to clinician workload. Emergency Departments (EDs) are under growing operational pressures, with administrative burden identified as a key factor in clinical burnout and reduced care efficiency. Time-consuming, repetitive tasks divert attention from patient care and contribute to delays across the care pathway. AI offers a promising strategy to streamline ED operations and reduce administrative burden across the three core phases of care as described by Asplin et al's model: input (registration and triage), throughput (care delivery), and output (discharge and transfer).

However, despite these advances, significant challenges remain. AI systems in high-acuity settings may produce inaccurate outputs, often referred to as "hallucinations," posing safety risks. Implementation also raises concerns related to data privacy, regulatory compliance, and the preservation of clinician-patient relationships. Many AI tools lack prospective validation in real-world ED environments, underscoring the need for further research and careful ethical integration. Research on ambient virtual scribes, for instance, is limited, with most studies conducted in outpatient clinics or inpatient wards rather than large-scale Emergency Departments, raising concerns about generalisability to diverse and high-acuity settings. Most scheduling algorithms remain unvalidated in emergency care and have not yet demonstrated a reduction in wait times or improvement in ED throughput. For automating medical coding, variability in documentation practices and coder behaviour across institutions may introduce bias, and most models are trained on retrospective, single-centre datasets, limiting their generalisability. Large Language Model (LLM) performance for generating discharge summaries has not yet been robustly benchmarked against clinician-generated summaries, and verification demands may offset intended time savings, particularly in high-acuity or legally sensitive contexts. Dataset bias and inconsistent training quality may further compromise safety in discharge documentation. Overall, while early studies highlight AI's potential, the current evidence base is limited in scope, generalisability, and emergency-specific validation, hindering the implementation of reliable systems.



b) Recommendations

AI offers a diverse range of promising applications to reduce administrative burden and improve workflow efficiency across all phases of Emergency Department care. Rigorous research is needed to evaluate effectiveness, reliability, human oversight, and ethical implications to support safe and effective integration into real-world ED workflows. A consensus statement among EM physicians is also needed to better define specific indications for AI application in the real world.

1. Input Phase (Initial Reception and Triage):

- **Automate Intake Processes:** Natural Language Processing (NLP) systems can extract structured data from free-text input, generate real-time intake reports, and produce handoff summaries, streamlining front-end workflow and reducing redundancy.
- **Support Early Clinical Decision-Making:** AI can improve patient prioritisation accuracy, minimise manual effort for acuity scoring, and enhance triage classification with lower under-triage rates and more efficient resource allocation. Boosting algorithms (e.g., XGBoost, LightGBM) have outperformed conventional triage methods. NLP-based tools (e.g., KATE) have demonstrated higher triage accuracy than nurses and physicians in high-volume environments. Computer AI vision may provide an optimised first assessment of the patient. By streamlining these processes, AI can help clinicians reallocate attention toward direct patient care.

2. Throughput Phase (Post-Triage Care):

- **Anticipate Patient Flow and Resource Allocation:** AI models using data from the first hour of presentation can allow ED managers to anticipate patient flow and allocate diagnostic or therapeutic resources accordingly. These systems can identify high-risk patients and trigger real-time alerts, improving prioritisation, reducing clerical workload, and facilitating timely clinical escalation.
- **Real-time Documentation:** AI-powered speech recognition systems (e.g., Voice-Generated Enhanced Electronic Notes (VGEENS)) use NLP to convert voice commands into structured documentation in real time, reducing clerical burden and enabling immediate data availability.
- **Optimize Internal Administrative Functions:** AI systems offer potential to optimise dynamic patient scheduling and staff roster coordination, theoretically reducing wait times, improving timeliness of care, and enhancing resource utilisation.

3. Output Phase (Discharge or Transfer):

- **Automate Medical Coding:** Automate medical coding processes by predicting billing code levels for ED encounters using data extracted from clinical notes and triage documentation. These systems can reduce manual documentation time, increase reimbursement accuracy, and potentially lower administrative costs.
- **Generate Discharge Summaries:** Large language models (LLMs) can be deployed to generate draft discharge summaries by synthesising clinical data. While requiring verification to avoid inaccuracies, these systems can enhance consistency and efficiency in discharge documentation.

4. General Applications & Further Research:

AI has been applied to improve all aspects of patient workflow, from EMS to triage, diagnostic, therapeutic, and prognostic issues.

AI can significantly improve transport time outliers in pre-hospital emergency support.

AI-driven forecasting can predict paediatric ED overcrowding, useful for improving organisation and physician shifts.

AI shows utility in supporting the interpretation of conventional radiology, CT-scans, and ultrasound imaging.

AI may be used in medical education and sociologic studies (e.g., assessing the effect of gender/ethnic background on triage prioritisation).

c) SWOT Analysis of the Recommendations

Strengths:

- **Administrative Burden Reduction:** AI can significantly reduce the administrative burden on clinicians across all phases of ED care, from streamlining intake to automating coding and discharge summaries.
- **Improved Efficiency and Workflow:** AI applications promise to enhance workflow efficiency, reduce delays, and optimise resource utilisation, potentially leading to better patient flow and reduced crowding.
- **Enhanced Clinical Decision Support:** AI can improve patient prioritisation, triage accuracy, and timely clinical escalation by identifying high-risk patients and providing real-time alerts.
- **Potential for Patient Safety:** By reducing human error (e.g., fatigue-related errors in triage) and improving data availability, AI can contribute to safer decision-making.
- **Broad Applicability:** AI has diverse applications, from imaging interpretation to managing EMS transport times and forecasting overcrowding.



Weaknesses:

- **Accuracy and “Hallucinations”:** AI systems, especially LLMs, can produce inaccurate outputs or “hallucinations,” posing safety risks and requiring significant human verification, potentially increasing workload.
- **Lack of Validation in ED Settings:** Much of the current evidence for AI tools comes from non-ED settings or retrospective, single-centre studies, limiting generalisability and reliability in high-acuity, dynamic emergency environments.
- **Data Privacy and Regulatory Concerns:** Implementation raises significant concerns regarding patient data privacy, regulatory compliance, and ethical integration.
- **Impact on Clinician-Patient Relationships:** The role of AI may affect the human element of the clinician-patient relationship, which needs careful consideration.
- **High Implementation Costs:** Deploying advanced AI systems and related infrastructure can involve significant upfront investment.



Opportunities:

- **Reallocation of Clinician Attention:** By automating routine and repetitive tasks, AI can enable clinicians to reallocate their attention toward direct patient care, improving overall quality.
- **Innovation in Care Delivery:** AI facilitates innovative approaches such as real-time documentation, dynamic scheduling, and potentially new diagnostic pathways at ED entry.
- **Standardisation and Consistency:** AI can enhance consistency in triage classification and documentation, reducing variability across different clinicians or institutions.
- **Enhanced Workforce Management:** AI can optimise internal administrative functions related to staff rostering and resource allocation, improving operational efficiency.



Threats:

- **Ethical Concerns:** Issues like dataset bias, inconsistent training quality, and potential for inappropriate or unethical use of AI (e.g., in sociologic studies) can compromise safety and trust.
- **Resistance from Staff:** Healthcare professionals may exhibit scepticism toward AI-driven decision-making or hesitate to depend on virtual consultations, requiring careful change management.
- **Regulatory Lag:** The rapid pace of AI development may outstrip regulatory frameworks, leading to challenges in ensuring safe and ethical deployment.
- **Over-reliance and Deskilling:** Over-reliance on AI could potentially lead to a deskilling of human professionals or a reduction in critical clinical judgment if not balanced with proper oversight.
- **Cybersecurity Risks:** Managing sensitive patient information with AI systems, especially those integrated with home monitoring, raises significant cybersecurity concerns.



Conclusion

In conclusion, the multifaceted nature of healthcare systems across Europe means that the recommendations presented in this document will inevitably have a **variable impact and different implementation timelines** from one country to another. Given this diversity, it will be crucial for each nation to **strategically define its priorities** to achieve the most significant and rapid effect in addressing workforce challenges. This essential exercise, focused on the specific needs of Emergency Medicine, also highlights the need for **similar comprehensive analyses and strategic planning across all other domains of healthcare**, as the workforce shortage is a systemic issue affecting the entire health sector. There is **no time to lose**; the urgency of the situation, driven by current deficits and future projections, dictates that ultimately, all proposed strategies and recommendations will likely need to find some form of application within healthcare systems to ensure long-term sustainability. Furthermore, as more individuals and organisations delve into this complex problem, it is anticipated that **new and innovative strategies will emerge over time**, particularly as technologies such as AI evolve and their applications become more robustly validated within real-world settings.

Next Steps for National Societies

To effectively address the growing challenges of workforce shortage in emergency care, national societies are encouraged to take the following actions:



Establish a dedicated workforce group, if not already in place, to coordinate efforts and drive strategic planning.



Engage with their national Emergency Nursing organisation to align priorities and share expertise.



Quantify the scale of the issue within their own country, using available data and frontline insights.



Initiate urgent discussions with their Government to advocate for sustainable workforce solutions and policy support.

These steps are essential to ensure a coordinated response and long-term resilience in emergency care systems.

The overarching challenge remains immense: to navigate these complexities with **creativity and flexibility** to ensure the **efficient yet high-quality provision of emergency care for the entire population.**