THE BEST OF aarc 2026

DAMMAM, KSA

15-17 JANUARY 2026

FRCS COURSES

Adults 15-16 JANUARY

NeoPed 16 JANUARY

CONFERENCE & EXHIBITION

VENUE: MOHAMMED ALMANA COLLEGE FOR MEDICAL SCIENCES

aarc American Association for Respiratory Care

In Collaboration With: American Respiratory Care Foundation

Event Hosted By: Mohammed Almana College for Medical Sciences

مركز جونز هوبكنز ارامكو الطبي Johns Hopkins Aramco Healthcare

IAU جامعة الإمام عبدالرحمن بن فيصل

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ABOUT DAMMAM

Dammam, the capital of Saudi Arabia's Eastern Province, is a vibrant coastal city where tradition meets modern progress. Overlooking the Arabian Gulf, Dammam serves as a strategic gateway connecting the Kingdom to regional and international trade routes. Its prime location, alongside neighboring cities Al Khobar and Dhahran, forms a dynamic metropolitan hub that plays a vital role in the nation's economic and cultural landscape.

Rich in heritage and culture, Dammam reflects the authentic spirit of the Eastern Province. Traditional values are preserved through local customs, cuisine, and community life, while museums and cultural centers showcase the region's deep connection to maritime history, pearl diving, and early trade. At the same time, the city embraces modernity through world-class infrastructure, business districts, and a growing arts and entertainment scene.
Dammam is also known for its welcoming atmosphere and scenic waterfront, with landmarks such as the Dammam Corniche offering breathtaking views of the Gulf. With its blend of cultural depth, historical significance, and contemporary lifestyle, Dammam stands as a distinguished destination—ideal for international conferences, professional gatherings, and cultural exchange.

Dammam's appeal is further enhanced by its excellent connectivity and hospitality offerings. The city is served by a modern international airport, an extensive road network, and a wide range of high-quality hotels and conference venues designed to meet international standards. Visitors and delegates alike enjoy a seamless experience, complemented by warm Saudi hospitality and a safe, well-organized urban environment. Whether attending a global conference, exploring cultural landmarks, or enjoying the coastal lifestyle, Dammam provides a setting that is both inspiring and highly accessible.

Dammam, Saudi Arabia is the third most populous city in Saudi Arabia with a population of 530,543 people. Dammam is the capital of the Dammam Governorate and is located at an elevation of 38 meters above sea level. Its total land area is just under 1,500 km2 (570 sq mi). A lot of people are simply captivated by the rich culture and interesting sights. Dammam, Saudi Arabia is a haven for many historic homes designed by famous architects and museums and has many priceless relics.

The city has a lot going for it as far as tourism is concerned. Dammam's attractions include pristine beaches, splendid historical sites that tell many tales from the Kingdom's history, an international airport, and hotels for those who have just arrived from abroad or need a place to rest before continuing their journey. Dammam offers a lot from water sports to shopping. In addition, there are some popular attractions such as Abu Al-Feda House, which is known as one of the oldest houses in Dammam.

Hot and dry desert air moves from interior areas to coastal areas. In winter, it's windy with temperatures reaching as low as 42 degrees Fahrenheit at night. In summer, it's cool with temperatures reaching as high as 91 degrees Fahrenheit in the daytime.

GENERAL INFORMATION

Badges:
Name badges must be visible and used at all times, anywhere at the conference venue, and off-site social activities.

Badges Color Coding:

- FACULTY
- DELEGATE
- DELEGATE
- EXHIBITOR
- STAFF
- MEDIA

CME Certification:
The Best of AARC 2026 Conference & FRCS Courses are accredited by The Saudi Commission for Health Specialties (SCFHS) for **26 CMEs**. In order to receive the CMEs, it is required to fill in the Evaluation and CME Acquisition Form online which will be published online after the course. Certificate of Attendance will be printed at the end of the evaluation acquisition form online.

FRCS Course Packets:
The Conference Packets will be distributed to registered participants at the Registration Desk.

Faculty Check in:
There is a dedicated faculty registration and badge collection desk and is operational at the same time as the registration desks.

Food & Beverage:
Coffee breaks and lunch will be open to registered delegates. The lunch boxes and snacks will be distributed during the breaks mentioned in the scientific program.

Automated Teller Machines (ATM):
There is an ATM located at the nearest petrol station.

Venue Rules:
Smoking Policy in the venue, the entire university is non-smoking.

Mobile Phones- Attendees are kindly requested to keep their mobile phones in the off mode in meeting rooms when scientific sessions are in progress.

Prayer Room:
Prayer rooms are available in the university.

Evacuation Assembly Point:
In case of an emergency evacuation procedure please proceed in an orderly fashion to the open area in front of the building. Please follow the instructions of the Mohammed Almana College for Medical Sciences Staff Wardens at all times.

WELCOME MESSAGE

Dear Colleagues,

We are delighted to welcome you to The Best of AARC2026 Conference & FRCS Courses, a three-day CONFERENCE & EXHIBITION to be held at Mohammed Almana College for Medical Sciences (MACHS), Dammam, Saudi Arabia from 15-17 January 2026. The conference is under the auspice of the American Association for Respiratory Care (AARC) in collaboration with the American Respiratory Care Foundation (ARCF), the Saudi Society for Respiratory Care (SSRC), Alfaisal University, Mohammed Almana College for Medical Sciences, Prince Sultan Military College of Health Sciences, John Hopkins Aramco Healthcare, and Imam Abdulrahman bin Faisal University, also there are multiple participations from the key Respiratory Care Departments and Programs in Saudi Arabia and GCC.

This year's Committee has prepared a comprehensive scientific and hands-on program that addresses all essential domains of Respiratory Care. The curriculum covers foundational modalities including 24 lectures encompassing Adult, Neonatal, and Pediatric Fundamentals of Respiratory Care, 8 clinical skills workshops.

Also, a dedicated one and half day with 16+ state-of-the-art lectures, debates, and pro/con sessions on the latest advances in respiratory care.

Whether you are a seasoned professional or embarking on your journey into Respiratory Care, this program is designed to enhance your knowledge, strengthen your clinical skills, and equip you for excellence in modern respiratory care. Throughout the conference, participants will explore common and complex respiratory conditions, diagnostic techniques, and emerging therapeutic modalities.

We extend our sincere appreciation to our host, Mohammed Almana College for Medical Sciences, for graciously supporting and hosting the Conference on their distinguished campus.

Our heartfelt gratitude also goes to our sponsors, whose support makes this event possible. We equally recognize and thank our committed faculty members and participants for their invaluable time, contribution, and dedication.

We look forward to welcoming you to this exceptional conference and its associated courses.

Best regards

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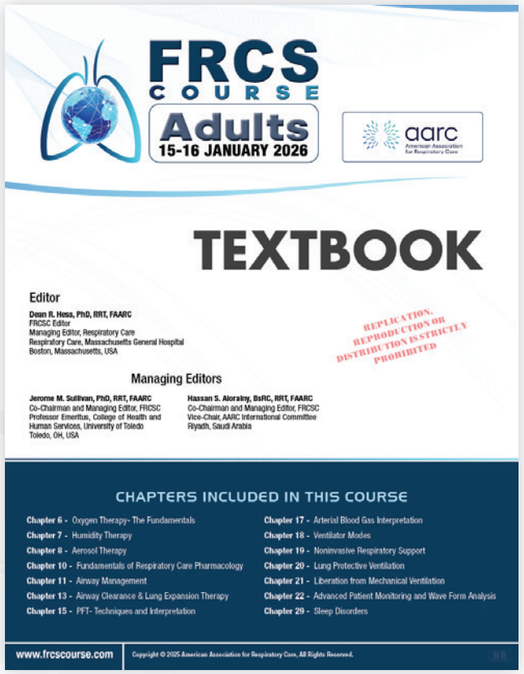
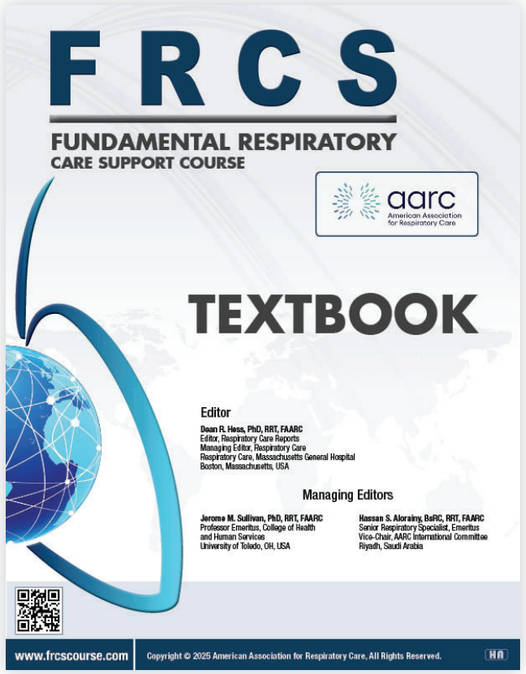
WHAT DOES EACH INCLUDE?

		THE BEST OF aarc 2026 DAMMAM, KSA 15-17 JANUARY 2026	FRCS COURSE Adults 15-16 JANUARY	FRCS COURSE NeoPed 16 JANUARY
1.	Attend the "**Best of AARC 2026**" State-Of-The-Art one and half day conference, starting the afternoon of Friday, 16 January, 2026 and Saturday, 17 January 2026.	✓	✓	✓
2.	Full access to the whole conference activities.	✓	✓	✓
3.	Attend the **FRCS-Adults** Lectures, all day on Thursday, 15 January 2026, delivered by leading speakers in Adult Respiratory Care.	✓	✓	
4.	Attend the **FRCS-NeoPed** Lectures, Morning of all Friday, 16 January 2026, delivered by leading speakers in Neonatal/ Pediatric Respiratory Care.	✓		✓
5.	Attend **FRCS-Adults** Workshops all day on Friday, 16 January 2026, conducted by leading instructors in Adult Respiratory Care.		✓	
6.	Sit for the **FRCS-Adults** Pre & Post Tests. (Pre-Test one month before the course, Post-Test immediately after the Workshop).		✓	
7.	Receive the **FRCS-Adults** Course textbook (~270 pages).		✓ *(see image)*	
8.	**FRCS-NeoPed** Workshops afternoon of Friday, 16 January 2026, conducted by leading instructors in Neonatal/ Pediatric Respiratory Care.			✓
9.	Sit for the **FRCS-NeoPed** Pre & Post Tests. (Pre-Test one month before the course, Post-Test immediately after the Workshop).			✓
10.	Receive the **FRCS-NeoPed** Course textbook (~120 pages).			✓ *(see image)*
11.	All Conference and Course Material.	✓	✓	✓
12.	Certificates of Attendance for the whole conference.	✓	✓	✓
13.	Earn **CMEs** from **SCFHS**.	✓	✓	✓
14.	Earn **CRCEs**, from the **AARC**.	✓	✓	✓
15.	Receive **FRCS** *Certificate of Successful Completion* upon passing the Post Course Exam.		✓ *(see image)*	✓ *(see image)*
16.	Enrolment in **AARC** membership for one (1) year.		✓	✓

WHAT DOES EACH INCLUDE?

THE BEST OF aarc 2026 DAMMAM, KSA 15-17 JANUARY 2026 | FRCS COURSES Adults 15-16 JANUARY NeoPed 16 JANUARY





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THE 3 DAYS PROGRAM STRUCTURE

THE BEST OF aarc 2026 DAMMAM, KSA 15-17 JANUARY 2026 | FRCS COURSES Adults 15-16 JANUARY NeoPed 16 JANUARY

Thursday, 15 Jan. 2026

MORNING

FRCS Adults 15-16 JANUARY — Main Auditorium

- Oxygen Therapy; The Fundamentals
- Humidity Therapy
- Aerosol Therapy
- Airway Clearance & Lung Expansion Therapy
- Airway Management
- Fundamentals of Respiratory Care Pharmacology
- Sleep Disorders

Lunch Break

AFTERNOON

FRCS Adults 15-16 JANUARY — Main Auditorium

- Acid Base Balance, Blood Gas Analysis & Oxygenation
- Pulmonary Function Testing- Techniques and Interpretation
- Noninvasive Respiratory Support
- Ventilator Modes
- Advanced Patient Monitoring & Waveform Analysis
- Lung Protective Ventilation Approaches in Various Diseases
- Liberation From Mechanical Ventilation

Friday, 16 Jan. 2026

MORNING

FRCS Adults 15-16 JANUARY — Classrooms	FRCS NeoPed 16 JANUARY — Main Auditorium
WORKSHOPS	• Pediatric Pathophysiology, Assessment and Monitoring • Neonatal Pathophysiology, Assessment and Monitoring • Respiratory Intensive Care of Neonates • Neonatal & Pediatric Resuscitation • Neonatal & Pediatric Ventilation
Aerosol Therapy	
Airway Clearance & Lung Expansion Therapy	
Airway Management	

Lunch Break

AFTERNOON

FRCS Adults 15-16 JANUARY — Classrooms	FRCS NeoPed 16 JANUARY — Classrooms
WORKSHOPS	**WORKSHOPS**
Noninvasive Respiratory Support	Neonatal & Pediatric Resuscitation
Ventilator Modes	Neonatal & Pediatric Ventilation
Pulmonary Function Testing	

Post FRCS-Adult Course Test

Post FRCS-NeoPed Course Test

Friday, 16 Jan. 2026

MORNING

FRCS NeoPed 16 JANUARY — Main Auditorium

- Pediatric Pathophysiology, Assessment and Monitoring
- Neonatal Pathophysiology, Assessment and Monitoring
- Respiratory Intensive Care of Neonates
- Neonatal & Pediatric Resuscitation
- Neonatal & Pediatric Ventilation

Lunch Break

AFTERNOON

aarc 2026 — Main Auditorium

INTERACTIVE SESSIONS

- International Collaboration in Respiratory Care Education
- Meet The Experts In Respiratory Care Services Management

HOT TOPICS IN PULMONARY FUNCTION TESTING & INTERPRETATIONS

- Mastering the Latest ATS Guidelines: Essential for Accurate Reporting and Interpretation.
- New Insights; The Evolving Role of Forced Oscillation Techniques in Pulmonary Function Testing.
- Forced Oscillation Technique (FOT): A New Technology

MEET THE INDUSTRIES SESSIONS

- Ventilation During CPR: Friend or Foe?
- Optimizing Inhalation: Better Outcomes with AeroChamber
- Tracheostomy Tubes: Overview and Clinical Applications
- Optimizing Airway Clearance in the Intensive Care Unit

ABSTRACT PRESENTATION

Post FRCS-Adult Course Test

Post FRCS-NeoPed Course Test

Saturday, 17 Jan. 2026

MORNING

aarc 2026 — Main Auditorium

- Shaping the Future in Healthcare: The AI Revolution in Respiratory Care
- What is Evidence-Based Respiratory Care?
- Healing the Healers; Burnout in Respiratory Care; Recognize, Respond, Recover
- The Future of Respiratory Care Profession and the Role of the AARC
- Individualized PEEP vs. PEEP Tables - What Does the Evidence Tell Us?
- HFNC Oxygen Therapy: Physiological Mechanisms, Initiation, and Management
- Using Pulse Oximetry Wisely
- Asynchrony: Consequences and Management

Lunch Break

AFTERNOON

aarc 2026 — Main Auditorium

- Modern Approaches to Infant Ventilation with Hypoxic Respiratory Failure; Innovations and Insights
- What We've Learned About Bronchiolitis and High Flow Nasal Cannula
- Advances in Asthma and COPD Treatment: What's New and What's Next?
- Simulation-Based Learning Reimagined: What's New, What Works, What's Next
- Optimizing Clinical Training: Strengthening Preceptor–Student Partnership
- Why Teams Fail: The Leadership Imperative in Transforming The Culture of Your Team
- What I've Learned After 50 Years in Respiratory Care

DAY 1 - THURSDAY, 15 JANUARY 2026 - AM

06:30 - 07:30	Registration

SESSION 1

Chairs:	Taha T. Ismaeil - RIYADH	Mohammed K. AlShehri - RIYADH
07:30 - 08:00	Oxygen Therapy; The Fundamentals Rioloida V. Diola - Philippines	
08:00 - 08:30	Humidity Therapy Dana L. Evans - USA	
08:30 - 09:00	Aerosol Therapy Douglas S. Gardenhire - USA	
09:00 - 09:30	Airway Clearance & Lung Expansion Therapy Carl R. Hinkson - USA	
09:30 - 10:00	Opening and Welcome Remarks	
10:00 - 10:30	COFFEE BREAK	

SESSION 2

Chairs:	Mohammed D. AlAhmari - DAMMAM	Tareq F. Alotaibi - RIYADH
10:30 - 11:00	Airway Management Rachael J. Sullivan - USA	
11:00 - 11:30	Fundamentals of Respiratory Care Pharmacology Douglas S. Gardenhire - USA	
11:30 - 12:00	Sleep Disorders Ahmed S. BaHammam - KSA	
12:00 - 13:00	LUNCH BREAK	

DAY 1 - THURSDAY, 15 JANUARY 2026 - PM

SESSION 3

Chairs:	Mohie Aldeen Khalifa - EGYPT	Yassin T. Ismaiel - MADINAH
13:00 - 13:30	Acid Base Balance, Blood Gas Analysis & Oxygenation J. Brady Scott - USA	
13:30 - 14:00	Pulmonary Function Testing- Techniques and Interpretation Hajed M. Al-Otaibi - KSA	
14:00 - 14:30	Noninvasive Respiratory Support Dean R. Hess - USA	
14:30 - 15:00	Ventilator Modes Thomas Piraino - Canada	
15:00 - 15:30	COFFEE BREAK	

SESSION 4

Chairs:	Sami M. Al Jerayed - DAMMAM	Yousef D. Alqurashi - DAMMAM
15:30 - 16:15	Advanced Patient Monitoring & Waveform Analysis J. Brady Scott - USA	
16:15 - 16:45	Lung Protective Ventilation Approaches in Various Diseases Dean R. Hess - USA	
16:45 - 17:15	Liberation From Mechanical Ventilation Thomas Piraino - Canada	

End of Day 1

DAY 2 - FRIDAY, 16 JANUARY 2026 - AM

Fundamentals of Respiratory Care- Adult Workshops

08:00 - 12:00 | Morning Sessions

TIME	WORKSHOP 1	WORKSHOP 2	WORKSHOP 3
Subject	Aerosol Therapy	Airway Clearance & Lung Expansion Therapy	Airway Management
Instructors	Douglas S. Gardenhire USA	Carl R. Hinkson USA	Rachael C. Sullivan USA
	Yahya A. Alzahrani DAMMAM	Abrar H. Bokhamseen DHAHRAN	Munyra I. Alhotye RIYADH
	Laila K. Jeftawi RIYADH	Jose Rex N. Navarrosa KSA DAMMAM	Husam Alahmadi JEDDAH
08:00 - 09:10	ADULT GROUP A Chair/Coordinator Fathadin A. Alahdal - JIZAN	ADULT GROUP B Chair/Coordinator Aqeel J. Almayouf - QATIF	ADULT GROUP C Chair/Coordinator Fouad Al Mutairi - JEDDAH
09:10 - 10:20	ADULT GROUP B	ADULT GROUP C	ADULT GROUP A
10:20 - 10:50	COFFEE BREAK		
10:50 - 12:00	ADULT GROUP C	ADULT GROUP A	ADULT GROUP B

12:00 - 13:00 LUNCH BREAK

DAY 2 - FRIDAY, 16 JANUARY 2026 - PM

Fundamentals of Respiratory Care- Adult Workshops

13:00 - 18:15 | Afternoon Sessions

TIME	WORKSHOP 4	WORKSHOP 5	WORKSHOP 6
Subject	Noninvasive Respiratory Support	Ventilator Modes	Pulmonary Function Testing
Instructors	Dean R. Hess USA	Thomas Piraino Canada	Hajed M. Al-Otaibi JEDDAH
	Ahmed S. BaHammam RIYADH	Abdulaziz Alyami DHAHRAN	Malak O. Alshlowi DAMMAM
	Abdullah Alharthi ALAHSA	Noorah A. AlNoaimi DAMMAM	Masarrah Y. AlJaroof DAMMAM
13:00 - 14:10	ADULT GROUP A Chair/Coordinator Ahmed S. Alrowaily - ALJOUF	ADULT GROUP B Chair/Coordinator Hessah G. Alotaibi - RIYADH	ADULT GROUP C Chair/Coordinator Siraj T. Jaishi - RIYADH
14:10 - 15:30	ADULT GROUP B	ADULT GROUP C	ADULT GROUP A
15:30 - 16:00	COFFEE BREAK		
16:00 - 17:15	ADULT GROUP C	ADULT GROUP A	ADULT GROUP B

17:30 - 18:15 FRCS Course Adults - POST TEST (Main Auditorium)

DAY 2 - FRIDAY, 16 JANUARY 2026 | 08:00 - 12:00

WORKSHOP - 1

Aerosol Therapy

OBJECTIVES:

Clinical skill demonstration on aerosol therapy will include three sparts and the learning objectives of each station are listed below.

Part 1: Aerosol Drug Delivery to Spontaneously Breathing Patients Using Nebulizers

- Review the features of each nebulizer and interface used in spontaneously breathing patients.
- Explain the selection of appropriate aerosol delivery devices and interfaces for this patient population.
- Demonstrate correct delivery techniques for jet and mesh nebulizers.
- Discuss strategies to improve patient education and adherence to aerosol therapy.
- Explain the cleaning and maintenance procedures for nebulizers.

Part 2: Aerosol Drug Delivery to Spontaneously Breathing Patients Using Inhalers

- Review the features of each inhaler used in spontaneously breathing patients
- Explain the selection of appropriate inhalers for this patient population.
- Demonstrate correct delivery techniques for pMDIs, DPIs, and SMIs.
- Discuss strategies to improve patient education and adherence to aerosol therapy.
- Explain the cleaning and maintenance procedures for different inhalers.

Part 3: Aerosol Drug Delivery to Patients Receiving Ventilatory Support

- Explain the selection of appropriate aerosol delivery devices for patients receiving invasive ventilation.
- Demonstrate effective techniques for aerosol drug delivery in mechanically ventilated patients.
- Explain the cleaning and maintenance procedures for different aerosol delivery devices.

INSTRUCTORS

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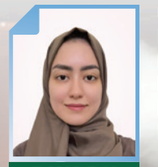

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WORKSHOPS

FRCS COURSES Adults 15-16 JANUARY

DAY 2 - FRIDAY, 16 JANUARY 2026 | 08:00 - 12:00

WORKSHOP - 2

Airway Clearance & Lung Expansion Therapy

OBJECTIVES:

Part 1: Airway Clearance Therapy

- Demonstrate the traditional chest physiotherapy technique
- Demonstrate the forced exhalation technique (FET) maneuver
- Demonstrate the autogenic drainage (AD) technique
- Review the characteristics/parts of each airway clearance device: HFCWC; PEP, OPEP, Insufflator/Exsufflater
- Explain the selection of the appropriate airway clearance device
- Explain mechanism of operation for each device and whenever applicable the parameters that need to be set by the clinician
- Demonstrate correct assembly and interface to patients
- Discuss measures that can improve patients' adherence to therapy
- List classes of medications used for airway clearance therapy

Part 2: Suctioning

- Assemble the items needed during suctioning of spontaneously breathing patient
- Assemble the items needed during suctioning of mechanically ventilated patient
- Demonstrate effective technique for suctioning spontaneously breathing patients
- Demonstrate effective technique for suctioning mechanically ventilated patients

Part 3: Lung Volume Recruitment

- Review the features of each incentive spirometers (e.g., flow-directed IS and volume directed IS)
- Demonstrate the appropriate use of each of the incentive spirometers
- Describe the use of manual resuscitator for performing lung volume recruitment
- Describe the use of mechanical ventilators for performing lung volume recruitment

INSTRUCTORS

LEAD INSTRUCTOR
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President, American Respiratory Care Foundation (ARCF)

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Dammam, Saudi Arabia

DAY 2 - FRIDAY, 16 JANUARY 2026 | 08:00 - 12:00

WORKSHOP - 3
Airway Management

OBJECTIVES:

Clinical skill demonstration of airway management techniques is divided into 3 parts with the following learning objectives:

Part 1: Anatomy, Airway Assessment, Basic Maneuvers and Equipment

- Describe upper airway anatomy.
- Describe assessment of the airway and identify the compromised airway.
- Describe basic airway maneuvers and equipment

Part 2: Advanced Manuevers and Equipment, Intubation Equipment

- Demonstrate appropriate bag mask ventilation techniques.
- Describe supraglottic airways and demonstrate insertion techniques
- Show intubation equipment: Endotracheal tube, Macintosh and Miller Blades, Video laryngoscope, bougies, bronchoscope

Part 3: Intubation, Ett Verification, Extubation, Tracheostomy

- Discusses process for intubation and demonstrates intubation
- Verification of tracheal intubation
- Discuss process for extubation
- Discuss indications for and demonstrate use of and placement of tracheostomy tube

INSTRUCTORS

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Jeddah, Saudi Arabia

DAY 2 - FRIDAY, 16 JANUARY 2026 | 13:00 - 18:30

WORKSHOP - 4
Noninvasive Respiratory Support

OBJECTIVES:

The purpose of this workshop is to address practical aspects of noninvasive respiratory support.

- Describe the selection of an appropriate interface for NIV in the acute care and longterm settings.
- Explain how to select appropriate settings for acute applications of NIV.
- Discuss monitoring and discontinuation of NIV in the acute care setting.
- Compare NIV, CPAP, and HFNC.
- Discuss approaches to NIV and CPAP intolerance.
- Compare approaches to humidification during CPAP and NIV.
- Select appropriate settings of flow and temperature during HFNC.
- Discuss approaches to discontinuation of HFNC.

INSTRUCTORS

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President, Asian Society of Sleep Medicine
Consultant Pulmonary and Sleep Medicine Director,
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Al Ahsa, Saudi Arabia

DAY 2 - FRIDAY, 16 JANUARY 2026 | 13:00 - 18:30

WORKSHOP - 5
Ventilator Modes

OBJECTIVES:

The purpose of this workshop is to provide practical and clinically relevant frameworks for the application of ventilator modes.

- Define mode of ventilation.
- Classify modes of ventilation.
- Describe the function of common modes of ventilation.
- Discuss clinical uses for each mode of ventilation.
- Choose appropriate initial ventilator settings for each mode.
- Use ventilator mode strategies to correct oxygenation and ventilation.
- Identify complications and shortcomings of various modes of ventilation.

INSTRUCTORS

LEAD INSTRUCTOR
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Dammam, Saudi Arabia

WORKSHOPS

DAY 2 - FRIDAY, 16 JANUARY 2026 | 13:00 - 18:30

WORKSHOP - 6
Pulmonary Function Testing

OBJECTIVES:

Clinical skill demonstration on pulmonary function testing will include three parts and the learning objectives of each station are listed below.

Part 1: Simple Spirometry
- Review volume and capacities used in simple spirometry measurement.
- Explain each volume and capacity measured and discuss the importance as it relates to lung physiology.
- Demonstrate correct techniques for simple spirometry.
- Discuss strategies and pitfalls to improve patient adherence to completing a successful spirometry.

Part 2: Lung Volumes, MVV and DLCO
- Review volume and capacities used in lung volume, MVV and DLCO measurements.
- Explain each test (LV, MVV and DLCO) and discuss its importance as it relates to lung physiology.
- Demonstrate correct delivery techniques for each test (LV, MVV, and DLCO).
- Discuss strategies and pitfalls to improve patient adherence in completing a successful trial of each test (LV, MVV, and DLCO).

Part 3: Interpretation of pulmonary function testing
- Explain normal values of pulmonary function testing.
- Discuss volumes and capacities as they relate to the pulmonary function testing.
- Interpret pulmonary function tests as related to simple spirometry, LV, MVV and DLCO.

INSTRUCTORS

JEDDAH

LEAD INSTRUCTOR
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Respiratory Therapy Department
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Dammam, Saudi Arabia

DAY 2 - FRIDAY, 16 JANUARY 2026 - AM

MORNING SESSIONS

07:00 - 07:50	Registration
07:50 - 08:00	Opening and Welcome Message

SESSION 1: Pediatric & Neonatal Respiratory Care

Chairs:	Ahmad I. AlHusseini - JEDDAH	Mushabbab Alahmari - BISHA
08:00 - 08:45	Pediatric Pathophysiology, Assessment and Monitoring Dana L. Evans - USA	
08:45 - 09:30	Neonatal Pathophysiology, Assessment and Monitoring Emilee Lamorena - USA	
09:30 - 10:15	Respiratory Intensive Care of Neonates Huayan Zhang - China/USA	
10:15 - 10:45	COFFEE BREAK	

SESSION 2: Pediatric & Neonatal Respiratory Care

Chairs:	Saleh S. Algarni - RIYADH	Bandar M. Faqihi - ALAHSA
10:45- 11:30	Neonatal & Pediatric Resuscitation Huayan Zhang - China/USA	
11:30 - 12:15	Neonatal & Pediatric Ventilation Emilee Lamorena - USA	
12:15 - 13:15	LUNCH BREAK	

SCIENTIFIC PROGRAM

DAY 2 - FRIDAY, 16 JANUARY 2026 - PM

Fundamentals of Respiratory Care- Pediatric & Neonatal Workshops
14:00-18:15 | Afternoon Sessions

TIME	WORKSHOP 1	WORKSHOP 2
Subject	Neonatal & Pediatric Resuscitation	Neonatal & Pediatric Ventilation
Instructors	Huayan Zhang USA/China	Emilee Lamorena USA
	Talal A. Altamimi KHOBAR	Ahmed I. Algahtani RIYADH
	Ghadeer AlOwaywi DAMMAM	Rawaa Felemban JEDDAH
14:00 - 15:30	NEOPED GROUP A Chair/Coordinator Fatimah A. Alfaraj - QATIF 5 MINUTES STRETCH	NEOPED GROUP B Chair/Coordinator Hamoud H. Alkurdi - DHAHRAN 5 MINUTES STRETCH
15:30 - 16:00	COFFEE BREAK	
16:00 - 17:15	NEOPED GROUP B 5 MINUTES STRETCH	NEOPED GROUP A 5 MINUTES STRETCH

17:30 - 18:15	FRCS Course NeoPed - POST TEST (Main Auditorium)

DAY 2 - FRIDAY, 16 JANUARY 2026 | 14:00 - 17:15

WORKSHOP - 1

Neonatal & Pediatric Resuscitation

OBJECTIVES:

Part 1: Bag & mask ventilation (BMV)
- Know the bag-valve-mask devices
- Demonstrate appropriate BMV techniques
- Understand the importance of pressure control during BMV

Part 2: Artificial airways
- Know the types of common artificial airways used in neonates and pediatric patients
- Demonstrate appropriate insertion techniques

Part 3: Team-based CPR
- Understand the importance of team coordination during resuscitation
- Know the procedure of CPR
- Demonstrate appropriate techniques of chest compression and defibrilization

INSTRUCTORS

LEAD INSTRUCTOR
Huayan Zhang, MD
Professor of Clinical Pediatrics and
Attending Neonatologist,
Director, Newborn and Infant Chronic Lung Disease Program
Children's Hospital of Philadelphia-University of Pennsylvania, Philadelphia, USA
Chief, Division of Neonatology,
Guangzhou Women & Children's Medical Center,
Guangzhou Medical University
Guangzhou, China

KHOBAR

CO-INSTRUCTOR
Talal Altamimi, MD
Consultant Neonatologist,
Neonatal Hemodynamics Program Lead
King Fahd University Hospital
Imam Abdulrahman bin Faisal University
Khobar, Saudi Arabia

DAMMAM

CO-INSTRUCTOR
Ghadeer AlOwaywi, MSRC, RT
Senior Respiratory Therapist and Lecturer
Quality Coordinator, Respiratory Therapy Program
Mohammed Al-Mana College for Medical Sciences
Dammam, Saudi Arabia

DAY 2 - FRIDAY, 16 JANUARY 2026 | 14:00 - 17:15

WORKSHOP - 2

Neonatal & Pediatric Mechanical Ventilation

OBJECTIVES:

Part 1: Ventilator Management for Extremely Low Birth Weight (ELBW) Premature Neonate
- Recognize of respiratory failure in the premature neonate and successfully demonstrate intubation and airway securement for neonatal patient.
- Discuss optimal ventilator management for ELBW neonates
- Initiate mechanical ventilation in ELBW neonate using Adaptive Ventilation Volume-Targeted Ventilation (VTV), and adjust ventilator settings in response to patient assessment, blood gas analysis, and clinical data.
- Troubleshoot common clinical scenarios while managing a patient on VTV

Part 2: Ventilator Management for the Pediatric Patient with PARDS
- Recognize of respiratory failure in pediatric patient and successfully demonstrate intubation and airway securement for neonatal patient.
- Identify and diagnose moderate-severe PARDS using PALICC criteria
- Discuss lung-protective ventilation strategies to prevent ventilator-induced lung injury when managing patients with PARDS
- Initiate mechanical ventilation for pediatric patient with PARDS. and adjust ventilator settings in response to patient assessment, blood gas analysis, and clinical data.
- Understand importance of daily Extubation Readiness Tests (ERTs) to safely progress patient to extubation

Part 3: Advanced / Non-Conventional Mechanical Ventilation in Neonatal - Pediatric Care
- Discuss theory of mechanism and management strategies for Neurally Adjusted Ventilatory Assist (NAVA)
- Discuss theory of mechanism and management strategies for High Frequency Oscillatory Ventilation (HFOV)

INSTRUCTORS

LEAD INSTRUCTOR
Emilee Lamorena, MSc, RRT, RRT-NPS
Director of Respiratory, Pulmonary,
and Asthma Program
Children's Hospital of Orange County (CHOC)
Orange, California, USA
AARC Chair of Neonatal/Pediatric Section

RIYADH

CO-INSTRUCTOR
Ahmed I. Algahtani, MSc, RRT, RRT-NPS
Senior Respiratory Care Specialist,
Pediatric Respiratory Care Division,
Prince Sultan Military Medical City
Riyadh, Saudi Arabia

JEDDAH

CO-INSTRUCTOR
Rawaa Felemban, MMed, RRT-NPS, RRT-ACCS, PMP
Respiratory Care Specialist
King Faisal Specialist Hospital & Research Center
Jeddah, Saudi Arabia

DAY 2 - FRIDAY, 16 JANUARY 2026 - PM

SESSION 1: Interactive Sessions

13:00 - 13:45 International Collaboration in Respiratory Care Education

Moderators: Dr. Jerome M. Sullivan - USA | Dr. Noor A. Alkhathlan - DAMMAM

Discussants:

- **Dr. Douglas S. Gardenhire** 🇺🇸 Georgia State University, Atlanta, GA, USA
- **Dr. J. Brady Scott** 🇺🇸 RUSH University, Chicago, IL, USA
- **Dr. Ghazi A Alotaibi** 🇸🇦 Arabian Gulf University, Bahrain

Discussion Topics:

- Dual Degrees/ Bridging Possibilities
- Curriculum Collaboration
- Advanced Degrees Requirements
- Joint Research Possibilities
- Faculty Exchange/ Visting Professors
- NBRC Registry Eligibility
- Distance Learning
- Optional Practice Therapy (OPT)
- Continuing Practice Therapy (CPT)

13:45 - 14:30 Meet The Experts In Respiratory Care Services Management

Moderators: Dr. Jerome M. Sullivan - USA | Mr. Daniel D. Garrett - USA

Discussants:

- **Dana L. Evans, MHA, RRT** 🇺🇸 Respiratory Regional Director, Midwest at Advocate Health Downers Grove, Illinois, USA
- **Carl R. Hinkson, MSc, RRT** 🇺🇸 Senior Director Ancillary Services, Providence Health & Services Everett, WA, USA
- **Emilee Lamorena, MSc, RRT** 🇺🇸 Director of RT, Pulmonary, & Asthma Program Children's Hospital of Orange County (CHOC) Orange, California, USA

Discussion Topics:

- Territory and competition between services
- Departments structures, past and present
- Relationship, medical staff, administration, other services
- Hiring, Retention, Morale, and Burnout
- Salaries and Incentives
- RTs Specialization

SESSION 2: Hot Topics In Pulmonary Function Testing & Interpretation

Chairs: Asma O. Alamoudi - DHAHRAN | Maher M. Alquaimi - DAMMAM

14:30 - 14:50	Mastering the Latest ATS Guidelines: Essential for Accurate Reporting and Interpretation. - Fatimah J. Alshammari RIYADH
14:50 - 15:10	New Insights; The Evolving Role of Forced Oscillation Techniques in Pulmonary Function Testing. - Afnan S. AlRaimi DAMMAM
15:10 - 15:25	Forced Oscillation Technique (FOT): A New Technology - Pasquale Pompilio - 🇮🇹 🇫🇷
15:25 - 16:00	COFFEE BREAK

THE BEST OF arc 2026 DAMMAM, KSA 15-17 JANUARY 2026

SCIENTIFIC PROGRAM

DAY 2 - FRIDAY, 16 JANUARY 2026 - PM

SESSION 3: Meet The Industries Sessions

Chairs: Abdulsalam A. Alzahrani - JEDDAH | Basmah H. Alanazi - RIYADH

16:00 - 16:10	Ventilation During CPR: Friend or Foe? - Ricardo Cordioli - 🇧🇷
16:10 - 16:20	Optimizing Inhalation: Better Outcomes with AeroChamber - Majdy Idrees - 🇸🇦
16:20 - 16:30	Tracheostomy Tubes: Overview and Clinical Applications - Julia Böhm - 🇩🇪
16:30 - 16:40	Optimizing Airway Clearance in the Intensive Care Unit - TBA

SESSION 4: Abstracts Presentation

Moderators: Jaber S. Alqahtani - DHAHRAN | Amal A. AlAmer - DAMMAM

16:45 - 16:50	**Non-Invasive Ventilation in Sickle Cell Disease and Acute Chest Syndrome: A Systematic Review and Meta-Analysis** Fatimah Alkuaibi, Makarem Alkhalaf, Saja Abuzaid, Najla Omar, Ghadeer Alowaywi, Ali Albahrani
16:50 - 16:55	**Prevalence, Clinical Correlates, and Small-Airway Features of Preserved Ratio Impaired Spirometry in a Saudi Hospital-Based Cohort** - Nowaf Y. Alobaidi, Ali Altoraibili
16:55 - 17:00	**An Innovative 3D-Printed Connector for Safe Switching Between Maximum Inspiratory Pressure Measurements and Mechanical Ventilator Without Patient Disconnection.** Maher Alquaimi, Mohammed Almughaleq, Abdullah Alfaris
17:00 - 17:05	**Acute Cardiovascular Responses to Hypoxia and Hypercapnia in Healthy Adults: The Role of the Carotid Body.** Hayyaf Al Dossary, Abdulaziz Bin Saleem, Abdullah Alrayes, Saleh Alotaibi, Mohammed Alanazi, Alya Almudarra, Lames Almutairi, Mohammed Ashoor, Najla Alfadhil, Aljoharah Bin Battal, Reema Alherbish
17:05 - 17:10	**Assessing The Efficacy of an Innovative Prototype of A Wearable Transcutaneous Carbon Dioxide Monitor in Healthy Subjects.** Alzahrani Lama, Almutairi Shahad, Alharbi Rana, Nogali Alaaa, Alahmadi Husam
17:10 - 17:25	**Abstracts Awards Presentation**

17:30 - 18:15 FRCS Course Adults & FRCS Course NeoPed - POST TEST (Main Auditorium)

End of Day 2

DAY 3 - SATURDAY, 17 JANUARY 2026 - AM

SESSION 5: Emerging Challenges and Innovations in Respiratory Care

Chairs: Jameel Hakeem - JEDDAH | Ahmed M. Alrajeh - ALAHSA

08:00 - 08:25	Shaping the Future in Healthcare: The AI Revolution in Respiratory Care J. Brady Scott - USA
08:25 - 08:50	What is Evidence-Based Respiratory Care? Dean R. Hess - USA
08:50 - 09:15	Healing the Healers; Burnout in Respiratory Care; Recognize, Respond, Recover Carl R. Hinkson - USA
09:15 - 09:40	The Future of Respiratory Care Profession and the Role of the AARC Dana L. Evans - USA
09:40 - 10:15	COFFEE BREAK

SESSION 6: Current Advances in Adult Respiratory Critical Care

Chairs: Ziyad Al Nufaiei - JEDDAH | Shoug Y. Al Houmoud - JUBAIL

10:15 - 10:40	Individualized PEEP vs. PEEP Tables - What Does the Evidence Tell Us? Thomas Piraino - Canada
10:40 - 11:05	HFNC Oxygen Therapy: Physiological Mechanisms, Initiation, and Management J. Brady Scott - USA
11:05 - 11:30	Using Pulse Oximetry Wisely Dean R. Hess - USA
11:30 - 11:55	Asynchrony: Consequences and Management Thomas Piraino - Canada
11:55 - 13:00	LUNCH BREAK

SCIENTIFIC PROGRAM

THE BEST OF aarc 2026 DAMMAM, KSA 15-17 JANUARY 2026

DAY 3 - SATURDAY, 17 JANUARY 2026 - PM

SESSION 7: NeoPed Respiratory Critical Care, Asthma/COPD

Chairs: Nowaf Y. Alobaidi - ALAHSA | Raid M. Alzahrani - JEDDAH

13:00 - 13:25	Advances in Asthma and COPD Treatment: What's New and What's Next? Majdy M. Idrees - KSA
13:25 - 13:50	Modern Approaches to Infant Ventilation with Hypoxic Respiratory Failure; Innovations and Insights Huayan Zhang - USA/China
13:50 - 14:15	What We've Learned About Bronchiolitis and High Flow Nasal Cannula Emilee Lamorena - USA
14:15 - 14:40	How to Achieve a Successful Career? Majdy M. Idrees - KSA
14:40 - 15:10	COFFEE BREAK

SESSION 8: Respiratory Care Education; Challenges and Breakthroughs

Chairs: Saad M. AlRabeeah - DHAHRAN | Hassan Aljohani - RIYADH

15:10 - 15:35	Simulation-Based Learning Reimagined: What's New, What Works, What's Next J. Brady Scott - USA
15:35 - 16:00	Optimizing Clinical Training: Strengthening Preceptor–Student Partnership Douglas S. Gardenhire - USA
16:00 - 16:25	Why Teams Fail: The Leadership Imperative in Transforming The Culture of Your Team Emilee Lamorena - USA
16:25 - 16:50	What I've Learned After 50 Years in Respiratory Care Dean R. Hess - USA
16:50 - 17:15	AWARDS & CLOSING REMARKS

End of Day 3

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“Joining the AARC has been impactful for my professional growth, starting when I was a university student and continuing now as a staff respiratory therapist. It connected me with mentors and peers and has helped me build friendships with people who share the same passion for our field. The educational resources, such as access to the Respiratory Care Journal, AARC Clinical Practice Guidelines (CPGs), and AARC University, keep me up to date.”

— Ali Al Khiry, MSc, RRT, RRT-NPS

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Dean R. Hess, PhD, RRT, FAARC
FRCS Editor
Managing Editor, Respiratory Care
Respiratory Care, Massachusetts
General Hospital
Boston, Massachusetts, USA

Dean Hess has been a respiratory therapist for over 50 years. During that time, he has worked as a bedside clinician, educator, manager, researcher, author, and editor. He was Editor in Chief of Respiratory Care, the official science journal of the American Association for Respiratory Care, from 2008 until 2017, and is the current Managing Editor of Respiratory Care. He is the Editor in Chief of the new open access Journal, Respiratory Care Reports. His research interests include adult invasive and noninvasive mechanical ventilation, aerosol delivery techniques, and critical care monitoring.

He is a Fellow of the American Association for Respiratory Care and the American College of Critical Care Medicine. He has over 300 papers published in the peer-reviewed literature, is the author of 5 textbooks, and has written numerous textbook chapters. His books have been translated into Korean, Chinese, Japanese, and Vietnamese. He has had a high level of professional activity, including current and past committee appointments with the American Association for Respiratory Care, the American Thoracic Society, the Society for Critical Care Medicine, the American College of Chest Physicians, and 2 years as President of the National Board for Respiratory Care.

Douglas S. Gardenhire, EdD, RRT, RRT-NPS, FAARC
Chair and Clinical Professor
Governor's Teaching Fellow
Department of Respiratory Therapy
Lewis College of Nursing and Health Professions
Georgia State University
Atlanta, GA, USA

Dr. Douglas S. Gardenhire is Clinical Professor and Chair of the Department of Respiratory Therapy. Additionally, he serves the College as the Assistant Dean of International Initiative, overseeing all international activities for nursing and health professions. He received his doctorate from the University of Georgia.

Dr. Gardenhire has authored a number of abstracts, original research and review articles on respiratory care education, international education, pharmacology, and aerosol medication. During his time at Georgia State University he has garnered over $1 million in external funding for the Department of Respiratory Therapy.

He is the author of Rau's Respiratory Care Pharmacology, chapter author on Airway Pharmacology for Egan's Fundamentals of Respiratory Care, as well as chapter author on Airway Pharmacology and Delivery of Aerosol Drug Therapy in Respiratory Care Clinical Lab Competency Manual. Dr. Gardenhire has been involved in many educational projects and conferences prepared by American Association for Respiratory Care (AARC), Georgia Society for Respiratory Care, and American Thoracic Society.

He received the Educator of the Year award and was indicted as a fellow in 2012 from the AARC and is a Governor's Teaching Fellow in the State of Georgia. In 2022 he was awarded the Jimmy A Young Medal by the AARC for his meritorious and lifetime contribution to the respiratory care. His research interests continue to focus on respiratory care education and trends, pharmacology, product evaluation, and international education.

Dana L. Evans, MHA, RRT, RRT-NPS, FACHE, FAARC
Respiratory Regional Director,
Midwest at Advocate Health
Downers Grove, Illinois, USA
President, American Association for Respiratory Care (AARC)

Ms. Evans received both her bachelor's degree in respiratory care and master's degree in healthcare administration from the University of Missouri. She has served the respiratory care profession in many roles, including neonatal/ pediatric critical care, adult critical care, transport medicine, program faculty and as an RT leader. Dana is a boardcertified healthcare leader as a of Fellow of the American College of Healthcare Executives, a distinction that has been achieved by less than 8500 healthcare leaders.

She is currently serving as President – Elect for the AARC Board of Directors and will be sworn in as President in November. She is also the Vice-Chair for the American Respiratory Care Foundation and is the Respiratory Regional Director for Advocate health, supporting nearly 1000 Respiratory Therapists in 27 hospitals in Illinois and Wisconsin.

J. Brady Scott, PhD, RRT, ACCS, AE-C, FAARC, FCCP
Professor and Program Director
Respiratory Care Program
Department of Cardiopulmonary Sciences-Division of Respiratory Care,
RUSH University
Chicago, IL, USA

Prof. Brady Scott is the respiratory care program director and associate professor in the Department of Cardiopulmonary Sciences, College of Health Sciences, Rush University in Chicago, Illinois, USA. He has been a respiratory therapist for more than 20 years and has clinical practice experience in adult emergency/critical respiratory care. His research interests include simulation-based education and emergency/critical respiratory care.

Carl R. Hinkson, MSc, RRT, RRT-ACCS, RRT-NPS, FAARC
Senior Director Ancillary Services
Providence Health & Services
Providence Regional Medical Center Everett,
Everett, WA, USA
President, American Respiratory Care Foundation (ARCF)

Carl Hinkson is the Senior Director of Ancillary Services at Providence Swedish North Puget Sound. His role has oversight over respiratory therapy, acute rehab therapies, outpatient rehab, EKG, EEG, cardiac ultrasound, cardiac and pulmonary rehab, and diagnostic Imaging. Mr. Hinkson has been a respiratory therapist since 1996. Mr. Hinkson served in many positions including Delegate, Vice President, and President in the Washington state affiliate. Carl joined the American Association for Respiratory Care Board of Directors in 2017 serving as Adult Acute Care Section Chair. He is currently the AARC President for 2023 through 2024, also he is Chair, American Respiratory Care Foundation (ARCF). He has lived all his life in Washington State and his married with two teenagers.

Majdy M. Idrees, MD, FRCPC, FPVRI
Head, Pulmonary Vascular Unit
Prince Sultan Military Medical City
Riyadh, Saudi Arabia
Adjunct Professor of Respiratory Medicine
University of British Columbia,
Vancouver, Canada

Majdy Idrees is an Adjunct Professor of Pulmonary Medicine at the University of British Columbia, Vancouver, Canada and the Former Head of Pulmonary Division and the Director of the Pulmonary Vascular Disease Unit at Prince Sultan Military Medical City (Armed Forces Hospital), Riyadh, Saudi Arabia. He was the first to establish the nucleus of pulmonary vascular diseases/ pulmonary hypertension medicine in the Arab Gulf countries and is the founder, and the former head, of the Saudi Association for Pulmonary Hypertension.

He received his MBBS degree from King Saud University in Riyadh, Saudi Arabia, and did his postgraduate training in both Internal Medicine and Pulmonary Medicine at the University of British Columbia, Canada from 1992 – 1997. He had his American Board degree in Pulmonary Medicine in 1996, and the Canadian Board in Pulmonary Medicine in 1997. His major area of research is related to pulmonary hypertension and pulmonary vascular diseases, and also to airways diseases. He has more than 50 publications in peer reviewed journals that include book chapters, original papers, and review articles.

He is the primary author of the Saudi Guidelines for the management of Pulmonary Hypertension and a coauthor of the Saudi Guidelines in both Asthma and COPD. He is a manuscript reviewer and co-editor of many medical journals. He was awarded and recognized for his achievements in the field of pulmonary vascular diseases by the Pulmonary Vascular Research Institute, and his name was added to the "Pulmonary Hypertension Committee of Honor" chosen by the Spanish Ministry of Health. He has been invited as a guest speaker in many national and International meetings and gave more than 450 lectures in different fields of pulmonary medicine.

Huayan Zhang, MD
Professor of Clinical Pediatrics and Attending Neonatologist,
Director, Newborn and Infant Chronic Lung Disease Program
Children's Hospital of Philadelphia-University of Pennsylvania, Philadelphia, USA
Chief, Division of Neonatology, Guangzhou Women and Children's Medical Center,
Guangzhou Medical University
Guangzhou, China

Huayan Zhang, MD, is an attending neonatologist at The Children's Hospital of Philadelphia (CHOP) and the Hospital of the University of Pennsylvania. She is a professor of clinical pediatrics at the Perelman School of Medicine at the University of Pennsylvania.

Dr. Zhang's clinical focus and research interests are in the prevention and management of bronchopulmonary dysplasia or infant chronic lung disease. She started the Newborn and Infant Chronic Lung Disease Program at CHOP in 2010 and currently serves as the director of the program. Dr. Zhang, together with a multidisciplinary team of colleagues, has developed this program into one of the world's largest center dedicated to the clinical treatment and knowledge advancement for infants with severe chronic lung disease.

Dr. Zhang has been actively engaged in the care of critically ill newborns and infants, teaching of medical students, residents, fellows, and other care providers. She is a well-respected master clinician and teacher at CHOP. She initially trained and worked as a pediatrician in China, and continues to devote her time and efforts in international activities to ensure children everywhere in the world have access to quality care and the best interventions. She has been a key member of CHOP's international collaborations in China and facilitated the training of numerous international pediatricians, neonatal fellows and medical students from Canada, Chile, China, Eastern Europe, India, Korea, and Mexico.

Rachael C. Sullivan, MD, MS, FACS
Trauma and Emergency General Surgeon and
Surgical Intensivist
Mercy St. Vincent Hospital
Toledo, Ohio, USA

Dr. Sullivan is a native northwest Ohioan and was born in Delta, Ohio, USA. She graduated Summa Cum Laude from The University of Toledo (Toledo, Ohio, USA) with her undergraduate studies majoring in Honors Biology with dual minors in Chemistry and Spanish. She completed medical school Magna Cum Laude at The Ohio State University in Columbus, Ohio, USA and stayed at The Ohio State University for her General Surgery Residency, her Surgical Critical Care Fellowship, as well as a Masters in Medical Science. She went on to practice as a Trauma and Emergency General Surgeon, and Surgical Critical Care Intensivist at the Cleveland Clinic in Ohio, USA as well as Mercy St. Louis, Missouri before coming back home to the Toledo and joining Bon Secours Mercy St. Vincent's Level 1 Trauma Center in Toledo as a Trauma and Emergency General Surgeon, and Surgical Critical Care Intensivist in 2023. Her interests include general surgery, operative trauma, and resuscitative critical care. She enjoys hiking, traveling, scuba diving, practicing Spanish, and spending time with her dogs and family.

Daniel D. Garrett, CAE
Executive Director,
American Association for Respiratory Care (AARC)
Irving, Texas, USA

Daniel D. Garrett serves as the Executive Director of the American Association for Respiratory Care (AARC), where he is dedicated to advancing the respiratory care profession through strategic leadership, innovation, and strong member engagement. With more than three decades of experience leading healthcare and professional membership organizations, he brings extensive expertise in organizational development, financial stewardship, advocacy, and governance.

At AARC, Mr. Garrett leads a dynamic team focused on enhancing the value delivered to members and the patients they serve. His leadership philosophy emphasizes collaboration, transparency, and a relentless pursuit of excellence. He is deeply committed to fostering a culture of continuous improvement and ensuring that organizational initiatives align with the rapidly evolving healthcare landscape.

Prior to joining AARC, Mr. Garrett served as Executive Director of the American Society of Transplant Surgeons (ASTS), where he led strategic initiatives that resulted in record-breaking attendance and revenue for the organization's annual symposium. Earlier in his career, Mr. Garrett held executive leadership roles with the American Academy of Cosmetic Surgeons (AACS), the Iowa Chiropractic Society and Foundation, the National Society to Prevent Blindness, the American Red Cross, and the Illinois CPA Society and Foundation. Across these organizations, he consistently drove financial turnarounds, digital transformation, and enhancements to member services that strengthened organizational performance and sustainability. Mr. Garrett is honored to lead AARC during a pivotal time for the respiratory care profession and looks forward to collaborating with members, partners, and stakeholders to help shape the future of respiratory care.

RIYADH

Ahmed S. BaHammam, MD, FRCP, FCCP
Professor of Medicine
Editor-in-Chief: Nature & Science of Sleep
President, Asian Society of Sleep Medicine
Consultant Pulmonary and Sleep Medicine Director, University Sleep Disorders Center
Executive Director, Academic Affairs, King Saud University Medical City
Director Prince Naif Health Research Center, King Saud University
Riyadh, Saudi Arabia

Dr. Ahmed S. BaHammam is currently the Professor of Medicine, at King Saud University, Saudi Arabia. He is also the director of Prince Naif Health Research Center in the same institute. Dr. BaHammam is one of the Executive Medical Director of Academic Affairs Medical City, King Saud University. He achieved membership of the Sleep and Respiratory Neurobiology (SRN) Assembly's Planning Committee: American Thoracic Society (ATS) (May 2018 – present). Also a member of Editorial Board, Saudi Medical Journal (2010-2014) and Editorial Board, Journal of Sleep Disorders & Therapy (ISSN: 2167-0277).

His certifications include FRCP London, 2009 from the Fellowship of the Royal College of physicians of London and FACP, 2009 from the Fellowship of the American College of Physicians. He was ranked 1st in the written exam of the European Diploma in Intensive Care Medicine, Paris 1997 and was also honored with King Saud University Life-time Achievement Award in 2016.

Emilee Lamorena, MSc, RRT, RRT-NPS
Director of Respiratory, Pulmonary, and Asthma Program
Children's Hospital of Orange County (CHOC)
AARC Chair of Neonatal/Pediatric Section
Orange, California, USA

Emilee Lamorena is the Director of Respiratory, Pulmonary, and Asthma Program at the Children's Hospital of Orange County. She has experience in leadership, education, quality improvement, and research. She received her Bachelor's in Biology from UCLA, and her Master's in Respiratory Care from Rush University. Emilee serves on the Board of Directors of the American Association for Respiratory Care as the Chair of the Neonatal/Pediatric Section, and is actively engaged in several national organizations as a consultant and leader for respiratory care. Emilee has received national recognition as an AARC Recognized Preceptor, and was named the 2020 AARC Neonatal/Pediatric Specialty Practitioner of the Year. The Orange County Business Journal recently named Emilee in their "OC50 2023: 50 People Shaping The Future of Healthcare in OC".

Thomas Piraino, RRT, FCSRT, FAARC
Respiratory Therapy Consultant
Lecturer, Department of Anesthesia, Division of Critical Care
McMaster University
Clinical Specialist-Mechanical Ventilation, Kingston General Hospital
Hamilton, Ontario, Canada

Thomas Piraino is a Registered Respiratory Therapist working at Kingston General Hospital in Ontario, and a Research Coordinator at St. Michael's Hospital in Toronto working with Dr. Laurent Brochard. He is also a Lecturer (Adjunct) for the Department of Anesthesia, Division of Critical Care at McMaster University, and is currently completing a MSc in Epidemiology. He has spoken at more than 50 conferences, authored research, editorials, and text book chapters. He has also won a number of awards and recognitions for his contributions to respiratory care.

Rioloida V. Diola, MD, RTRP, FPCP, FPCCP
Consultant and Head Intensive Care Unit, St Luke's Medical Center
ECMO and Chest Ultrasound Specialist
Faculty, St Luke's College of Medicine
Head, Section of Pulmonology, De Los Santos Medical Center
Manila, Philippines

Dr. Rioloida Diola is a registered respiratory therapist who previously worked at UERMMMC as a respiratory therapist before she became an internist-pulmonologist. With her passion to respiratory care, she further pursued training in ECMO in Taiwan, Chest Ultrasound in Taiwan, and Respiratory and Critical Care in Spain. She was the Program Chair of Department of Respiratory Therapy at Trinity University of Asia. She was also a previous Training Officer at the Institute of Pulmonary Medicine at St Lukes Medical Center. Currently, she holds positions like: Head, Intensive Care Unit, St Luke's Medical Center QC; Head, Section of Pulmonology, De Los Santos Medical Center; Faculty, St Luke's Medical Center-College of Medicine; Founding Member, Philippine Society of ECMO; and, Medical Advisor, International Council for Respiratory Care Philippines. She was also awarded International Fellow, American Association of Respiratory Care 2023.

JEDDAH

Hajed M. Al-Otaibi, PhD, RRT
Associate Professor of Respiratory Therapy
Vice Dean for Postgraduate Studies and Scientific Research,
Director, Respiratory Therapy
Department, King AbdulAziz University
Jeddah, Saudi Arabia

Dr. Hajed Al-Otaibi completed his PhD at the University of Nottingham in 2011, with research focused on mechanical ventilator management, ventilator adjustment, and oxygenation indices. In early 2012, he was appointed Assistant Professor of Respiratory Care at the College of Applied Medical Sciences, and later the same year became Chairman of the Respiratory Care Department.

In 2014, Dr. Al-Otaibi earned certification as a Tobacco Treatment Specialist, followed by his appointment in February 2015 as a Tobacco Treatment Trainer for healthcare providers. He is currently an Associate Professor and Consultant of Respiratory Therapy at King Abdulaziz University. In addition, he serves as Chairman of the Scientific Council for Health Rehabilitation at the Saudi Commission for Health Specialties. In 2023, he was elected President of the Saudi Scientific Society for Tobacco Control.

JEDDAH

Husam Alahmadi, PhD, RRT, RRT-NPS, RRT-RPFT, AE-C
Assistant Professor & Consultant in Respiratory Therapy
Deputy Director, Alumni & Skills Development Center
King Abdulaziz University (KAU)
Jeddah, Saudi Arabia

Dr. Husam Alahmadi is an Assistant Professor and Consultant in Respiratory Therapy at King Abdulaziz University, where he also chairs the Data Management and Decision Support Unit at the Faculty of Medical Rehabilitation Sciences. He earned a Ph.D. in Anesthesia & Critical Care from the University of Nottingham, using computational modeling to develop strategies that mitigate hypoxemia in high risk patients during anesthesia and critical care. His work spans clinical innovation and big data analytics, and he has led award winning projects recognized nationally and internationally; he also holds two published patents related to protective mechanical ventilation.

RIYADH

Laila K. Jeftawi, MSc, RRT
Lecturer, Senior Specialist and Director,
Respiratory Care Program
Princess Nourah Bint Abdulrahman University
Riyadh, Saudi Arabia

Laila Jeftawi is a Senior Respiratory Specialist and NBRC-certified Registered Respiratory Therapist (RRT) with a Master's degree in Respiratory Care. She currently serves as a Lecturer and Program Director of the Respiratory Care Program at Princess Nourah Bint Abdulrahman University.

Her professional journey bridges clinical expertise, academic leadership, and educational innovation, focusing on advancing respiratory care education in Saudi Arabia. Laila has played a key role in developing competency-based curricula, improving simulation-based training, and promoting research and quality initiatives in respiratory care.

Her professional interests include pulmonary rehabilitation, neonatal and pediatric respiratory care, simulation-based learning, and the integration of artificial intelligence in respiratory care.

Laila is known for her forward-thinking approach, mentoring future respiratory therapists to combine science, empathy, and leadership in clinical practice.

RIYADH

Munyra I. Alhotye, PhD, RRT-NPS
Assistant Professor, Senior Respiratory Therapist, Clinical Coordinator
Department of Respiratory Therapy
College of Applied Medical Sciences
King Saud bin Abdulaziz University for Health Sciences
Riyadh, Saudi Arabia

Dr. Munyra Alhotye is an Assistant Professor of Respiratory Therapy at the College of Applied Medical Sciences, King Saud bin Abdulaziz University for Health Sciences (KSAU-HS), Riyadh, Kingdom of Saudi Arabia. She is a respiratory therapy senior specialist and academic with expertise in chronic respiratory diseases including (COPD and asthma), cardiopulmonary rehabilitation, and neonatal and pediatric respiratory care.

Her research portfolio encompasses retrospective and survey-based studies, as well as clinical trials, with several published articles focusing on pulmonary and cardiac diseases, including post–COVID-19 complications. Dr. Alhotye's work reflects a strong commitment to improving patient care outcomes through evidence-based respiratory practice and applied clinical research.

In addition to her academic and clinical roles, Dr. Alhotye serves as Clinical Coordinator and a Member of the Quality Assurance and Academic Accreditation Committee in the Department of Respiratory Therapy. She also contributes actively as the department's Community Officer, leading numerous outreach activities designed to raise public awareness about respiratory health, disease prevention, and the importance of early intervention.

Dr. Alhotye is dedicated to bridging the gap between education, research, and clinical application. Her vision focuses on advancing respiratory care practices in both adult and pediatric populations, enhancing the integration of evidence-based care into clinical training, and expanding community engagement to promote respiratory health literacy. She continues to contribute to national and international collaborations aimed at advancing respiratory care education and optimizing clinical outcomes across healthcare systems.

DAMMAM

Jose Rex N. Navarrosa, BSRT, RTRP
Skill Laboratory Instructor, Respiratory Care Department
Head, Quality and Accreditation Unit
College of Applied Medical Sciences
Imam Abdulrahman Bin Faisal University
Dammam, Saudi Arabia

A Licensed Respiratory Therapist with 32 years of clinical and academic experiences in respiratory care. Currently, the Head of the Quality and Accreditation Unit of the College of Applied Medical Sciences, Imam Abdulrahman Bin Faisal University and Quality Coordinator of the program. An active professional leader: Immediate Past President of the Philippine Professional Organization-Saudi Arabia Council 2024. Founding (2015-2018) and Immediate Past President of the Philippine Society for the Advancement of Respiratory Therapy-Saudi Arabia (2021-2024). Board Member (Elect) of the Saudi Society for Respiratory Care. Recipient of prestigious awards, Blue Falcon Awardee for Outstanding Alumni of Victorino Mapa High School Alumni Association Outstanding (2018) , OFW Congress Outstanding Men Awardee (2017), Outstanding Migrant Worker Awardee, Philippine Embassy in Riyadh (2018). The Filipino Times Watchlist Top Filipino Healthcare Professional 2024 Awardee and one of the panel of judges and awardee for 2025

DAMMAM

Ghadeer AlOwaywi, MSRC, RT
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Quality Coordinator, Respiratory Therapy Program
Mohammed Almana College for Medical Sciences
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Ghadeer A. Alowaywi, MScRT, CPHQ, CKPIP, is a Respiratory Therapy Lecturer and Quality Coordinator at Mohammed Al-Mana College for Medical Sciences. She holds a master's degree from Georgia State University and previously worked as a Respiratory Therapist in neonatal and pediatric ICUs, wards, and the emergency department at Maternity and Children Hospital in Al Hassa. Ghadeer contributes to curriculum delivery, student mentoring, quality assurance, and accreditation readiness within the respiratory therapy program. Her research interests include high-flow nasal cannula (HFNC), acute chest syndrome, preterm neonates, and respiratory management, with publications in peer-reviewed journals.

DHAHRAN

Abrar H. Bokhamseen, BsRC, RRT
Senior Respiratory Therapist
Imam Abdulrahman Alfaisal Hospital, NG
Dhahran, Saudi Arabia

Dr. Abrar Bokhamseen is an American Board–certified Respiratory Therapist (NBRC – CRT & RRT) with over 20 years of professional experience in both Saudi Arabia and the United States. She currently serves at National Guard Health Affairs – Dammam as a Respiratory Therapist, Quality Representative, and Safety Inspector. Over the past five years, Dr. Bokhamseen has led departmental quality improvement initiatives, serving as the Quality Representative and overseeing key performance indicator (KPI) monitoring, data analysis, internal audits, and accreditation preparedness for CBAHI and JCI. She has played a pivotal role in the planning, implementation, and follow-up of quality initiatives to ensure regulatory compliance, enhance patient safety, and promote continuous improvement. Dr. Bokhamseen brings extensive clinical expertise across critical care areas and is a certified Neonatal Resuscitation Program (NRP) and Basic Life Support (BLS) Instructor. She remains actively engaged in professional conferences, clinical workshops, and patient safety initiatives, contributing to ongoing advancement in respiratory care practice.

ALAHSA

Abdullah Alharthi, BsRT, RRT
Supervisor Respiratory Services Department
King Abdulaziz Hospital – National Guard
Health Affairs (KAH-NGHA)
Al Ahsa, Saudi Arabia

Abdullah Nasser Alharthi, a Respiratory Therapist and supervisor at King Abdulaziz Hospital – National Guard Health Affairs, Al-Ahsa. Abdullah is known for his strong commitment to patient care, his active role in teaching and guiding both interns and staff, and his continuous efforts to improve respiratory services. He also works closely with the King Saud bin Abdulaziz University for Health Sciences – Al-Ahsa, Respiratory Services Department (RSD) as joint faculty, helping to support and develop respiratory care education and practice. His leadership and professionalism make a positive difference in the department and in patient outcomes.

DAMMAM

Yahya A. Alzahrani, PhD, RRT-NPS, RPFT, AE-C
Assistant Professor and Consultant Respiratory Care
Chair, Department of Respiratory Care-Dammam
Imam Abdulrahman Bin Faisal University
Dammam, Saudi Arabia

Dr. Yahya Alzahrani is an assistant professor with over 16 years of experience in teaching respiratory care. He has taught courses in respiratory care therapeutics, patient assessment, neonatal and pediatric respiratory care, as well as basic and advanced mechanical ventilation. With three years of experience as a staff respiratory therapist in critical care settings, he brings practical insights to his role as a clinical instructor, enhancing student training.

Dr. Alzahrani's research focuses on asthma management and education. He is particularly interested in studying the impact of asthma, levels of asthma control, and public attitudes and behaviors towards asthma management. Additionally, he explores the effects of alternative educational interventions on respiratory care students' performance and attitudes. Dr. Alzahrani has also held leadership positions with the College of Applied Medical Sciences at Imam Abdulrahman Bin Faisal University.

DHAHRAN

Abdulaziz Alyami, MsRC, RRT, MBA
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Education Lead, Specialized Therapy and Clinical Services
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Dhahran, Saudi Arabia

Dr. Abdulaziz Alyami is a senior respiratory therapist at Johns Hopkins Aramco Healthcare (JHAH). He holds a Master's degree in Respiratory Care from the University of Texas, USA, in addition to a Master of Business Administration.

Dr. Alyami serves as the Educational Lead for Specialized Therapy and Clinical Services at JHAH, where he plays a key role in advancing clinical education and professional development. He is also the Program Director for the Respiratory Critical Care Postgraduate Program at JHAH, overseeing curriculum development, training standards, and program implementation.

With a strong background in clinical practice, education, and healthcare leadership, Dr. Alyami is actively involved in strengthening respiratory care services and postgraduate training programs to support excellence in patient care.

FACULTY PROFILE

DAMMAM

Masarrah Y. AlJaroof, PhD, RRT, RPFT, NCTTP
Assistant Professor of Respiratory Care
Respiratory Therapy Department
Mohammed Almana College for Medical Sciences
Dammam, Saudi Arabia

Dr. Masarrah Aljaroof is an Assistant Professor of Respiratory Care at Mohammed Al-Mana College for Medical Sciences, where she teaches basic and advanced mechanical ventilation, patient assessment, and research methodology. She is actively involved in curriculum development and serves on both departmental and central research committees.

Her background combines clinical expertise, leadership, and education. She has practiced in critical care and pulmonary diagnostics, received training in pulmonary rehabilitation, and advanced her role in smoking cessation through the National Certificate in Tobacco Treatment Practice (NCTTP). She has also served as Supervisor and Head of the Respiratory Therapy Department, contributing to service development and performance improvement.

Dr. Aljaroof research integrates lung mechanics with metabolomics to better understand and differentiate acute cardiorespiratory conditions including COPD exacerbations, acute asthma, pneumonia, and acute heart failure. She is currently working on identifying potential biomarkers and investigating lipid mediator dysfunction, while having demonstrated the clinical utility of handheld forced oscillation techniques (FOT) in acute care.

Dedicated to advancing the profession, Dr. Aljaroof fosters learning through creativity, collaboration, and professionalism, preparing future respiratory care professionals for both clinical and academic excellence.

DAMMAM

Afnan S. AlRaimi, PhD, RRT
Assistant Professor and Senior Specialist
Head of the Respiratory Clinic at the Family and Community Medicine Center
Head of the Teaching and Assessment Unit
Respiratory Care Department
College of Applied Medical Sciences
Imam Abdulrahman bin Faisal University
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Dr. Afnan AlRaimi earned her bachelor's degree in respiratory care from Imam Abdulrahman bin Faisal University. She also obtained her master's from Rush University and her PhD degree from. University of Leicester. Her professional experience spans clinical practice, education, and research. As a respiratory therapist, she served many roles in critical care, emergency care, neonatal and pediatric care, pulmonary function testing, patient education, and rehabilitation.

Dr. Afnan AlRaimi is an assistant professor in the respiratory care department at Imam Abdulrahman bin Faisal University. She has extensive experience in teaching, focusing on Medical Gas Therapy, Respiratory Care Therapeutics, Pulmonary Rehabilitation, and Fundamentals of Polysomnography. Her teaching involves lectures, labs, and clinical courses across various levels.
Her research interests include the diagnosis, monitoring, and management of asthma and using innovative methods of measuring lung function and mechanics, as well as educational aspects for students and patients.

DAMMAM

Noorah A. AlNoaimi, MSc, RT
Respiratory Care Specialist and Lecturer,
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Noorah Al Noaimi holds a Master's degree in Respiratory Clinical Sciences from University College London (UCL), United Kingdom. She has extensive clinical experience across intensive care units caring for neonatal, pediatric, and adult populations, with strong expertise in mechanical ventilation, critical care, and advanced respiratory therapies.

She is currently a Lecturer in the Respiratory Care Department at Imam Abdulrahman bin Faisal University, where she specializes in simulation-based education, clinical training, and the development of immersive learning experiences for respiratory care students. Her teaching focuses on preparing future respiratory therapists with the skills, confidence, and critical thinking required for real-world practice.

JEDDAH

Rawaa Felemban, MMed, RRT-NPS, RRT-ACCS, PMP
Respiratory Care Specialist
King Faisal Specialist Hospital & Research Center
Jeddah, Saudi Arabia

Rawaa is a respiratory care specialist with a decade of experience in the United States and Saudi Arabia, working across adult, pediatric, and neonatal critical care. She earned her Bachelor's in Respiratory Care from Georgia State University and a Master's in Medical Education from Fakeeh College for Health Sciences.

Certified as both an NPS and ACCS, Rawaa is committed to evidence-based practice and advancing patient care. She is passionate about educating and mentoring future respiratory therapists and other healthcare professionals, with research interests focused on improving the quality of medical education.

DAMMAM

Malak O. Alshlowi, PhD, RT
Assistant Professor and Lecturer,
Respiratory Care Department
Head of Scholarship Affairs Unit
College of Applied Medical Sciences
Imam Abdulrahman Bin Faisal University
Dammam, Saudi Arabia

Dr. Malak Alshlowi is an Assistant Professor and Senior Specialist in Respiratory Care at Imam Abdulrahman Bin Faisal University (IAU). She holds a PhD in Pediatric Pulmonary Function Testing from the University of Leicester and a Master's degree in Respiratory Therapy from Georgia State University. Additionally, she holds professional fellowships in university teaching and higher education, reflecting a strong foundation in academic leadership.

Dr. Alshlowi currently serves as the Head of the Postgraduate Scholarship Affairs Unit at the College of Applied Medical Sciences (CAMS) and as Academic Coordinator for both Undergraduate and Postgraduate Respiratory Care programs. Her expertise lies in pediatric asthma diagnostics and pulmonary function testing, particularly the use of forced oscillation techniques, as well as in respiratory therapy education. She is actively involved in research with publications in peer-reviewed journals, while contributing to curriculum development, student mentorship, and the advancement of postgraduate scholarship programs.

RIYADH

Fatimah J. Alshammari, MHS, RRT, ACCS, RRT-NPS, RPFT
Head, Respiratory Services
Department of Medicine,
Prince Sultan Military Medical City
Lecturer, Princess Nourah Bint Abdulrahman University
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Ms. Alshammari graduated with honors from Bellarmine University, USA, earning a Master's degree in Respiratory Therapy and Leadership. Certified by the National Board for Respiratory Care (NBRC), her credentials include RRT, RRT-NPS, ACCS, and RPFT. She served for around 15 years at Prince Sultan Military Medical City PSMMC. Her rules as a therapist and senior supervisor cover different areas in the hospital including AICU, PICU, NICU, words, and emergency departments. She was one of the members of the team who established a very advanced mechanical ventilation (NAVA mode) at PSMMC in 2013 and in the middle east. She was appointed to train the First Military Female batch in the Ministry of Défense which was started in 2021 till present.

Currently, she is the Head of Respiratory Care Services at PSMMC's Medicine Department, overseeing the Pulmonary Function Testing Unit, the Sleep Disorders Center, and the Pulmonary Rehabilitation Center. She is also lecturer at Princess Nourah Bint Abdulrahman University (PNU).

RIYADH

Ahmed I. Algahtani, MSc, RRT, RRT-NPS
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Prince Sultan Military Medical City
Riyadh, Saudi Arabia

Ahmed is a Senior Respiratory Care Specialist with 15 years of experience in respiratory care, both nationally and abroad. His expertise covers all clinical and academic aspects of the profession, and he holds a master's degree in respiratory care science with honors from Rush University. Currently, Dr. Ahmed is a senior respiratory practitioner at the Department of Pediatrics, Respiratory Care Division, PSMMC, Riyadh, Saudi Arabia.

During his critical respiratory care career, he was involved in all aspects of the respiratory care profession on the clinical, academic, and administrative levels. He also participated as a scientific committee member, track chairman, and invited speaker in over ten national and international conferences. He served as a critical respiratory care chapter head at SCCS and a member of the SSRC board of directors. He has a particular interest in quality respiratory care and patient safety.

KHOBAR

Talal Altamimi, MD
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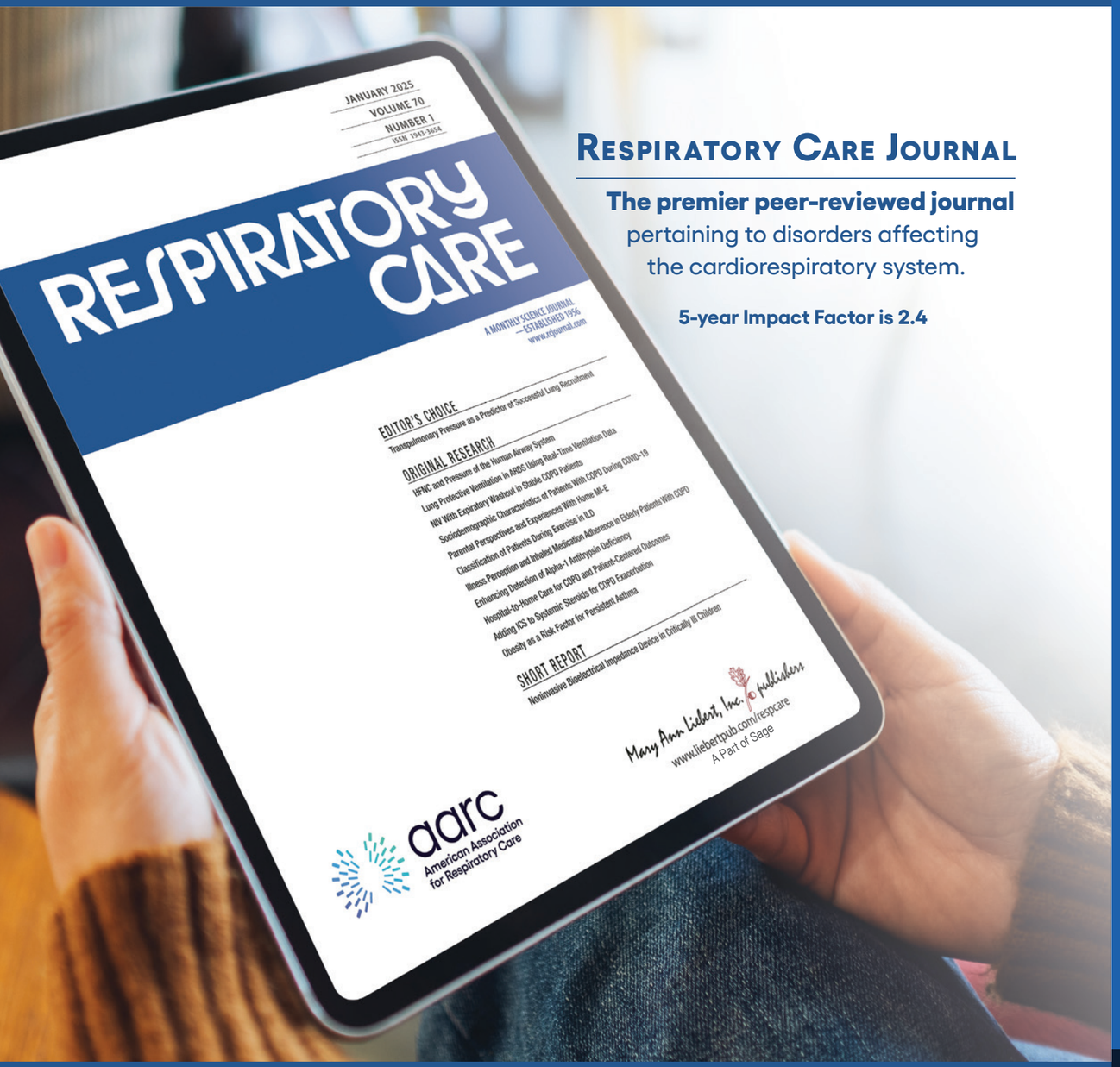
Neonatal Hemodynamics Program Lead
King Fahd University Hospital
Imam Abdulrahman bin Faisal University
Khobar, Saudi Arabia

Dr. Talal Altamimi is a Consultant Neonatologist at IA University and KFU Hospital, Saudi Arabia, specializing in neonatal hemodynamics and POCUS. He trained at the University of Western Ontario, Canada, and serves as lead of Hemodynamics and POCUS service. Associate Program Director for the NPM Fellowship and Head of the Saudi Neonatal Society, Eastern Province. Dr. Altamimi is active in conferences and workshops across the Middle East ,Europe and Canada with research interests in cardiac function in CDH and prediction of pulmonary hemorrhage.



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Aim and Scope

Respiratory Care Reports (RCR) is a fully Open Access, peer-reviewed journal dedicated to providing an inclusive platform for the global respiratory care community. By ensuring free and unrestricted access to research, the journal welcomes contributions from respiratory therapists, physicians, researchers, educators, managers, and others at all levels of practice. Respiratory Care Reports values diverse perspectives and aims to foster collaboration across disciplines, settings, and regions to support the advancement of respiratory care worldwide.

The journal publishes original research, reviews, case reports, and clinical studies covering all aspects of respiratory care, from foundational research to practical applications in clinical settings. Topics include respiratory therapy, mechanical ventilation, oxygen therapy, pulmonary rehabilitation, education, management, and a broad spectrum of respiratory care practices listed below. By embracing a wide range of research, Respiratory Care Reports serves as a vital resource for sharing knowledge, improving patient care, and strengthening the respiratory care profession. As a companion to the flagship journal Respiratory Care, which is owned and overseen by the American Association for Respiratory Care (AARC), Respiratory Care Reports extends the reach of the AARC's commitment to advancing knowledge and excellence in the field.

Areas of Interest:

- Management of acute and chronic respiratory failure
- Practice of respiratory therapy
- Innovations in mechanical ventilation and non-invasive ventilation (NIV)
- Airway management and bronchoscopy techniques
- Oxygen therapy advancements
- Education of respiratory therapy students and management of respiratory care departments
- Pulmonary rehabilitation and physical therapy
- Sleep-disordered breathing and CPAP therapy
- Pediatric and neonatal respiratory care
- Physiology-related topics as they apply to the cardiopulmonary system
- Ventilator-associated pneumonia and infection control
- Emerging therapies in obstructive and restrictive lung diseases
- Respiratory care in low-resource settings
- Digital health and remote monitoring in respiratory medicine
- Health disparities and access to respiratory care

Respiratory Care Reports

SageJournals

The Associations of Anaemia Status and Body Mass Index with Asthma Severity in Saudi Arabia: A Comparative Study

Alaa A Bugis, Bussma Bugis , Abdulsalam Alzahrani, Ali Hasan Alamri, Hamad Hani Almalki, Jamal Hassan Alshehri , Abdullah Ali Alqarni, Faisal A Turkestani

Purpose:
This study aimed to investigate the associations of anaemia status and body mass index (BMI) with asthma severity in adult subjects.

Methods:
The study included 300 adults who had asthma and admitted to King Abdulaziz Medical City from about 2017 to 2022. The subjects' demographic data, BMI, anaemia status, and number of asthma-related hospital admissions were analyzed. Associations between anaemia, BMI, and asthma severity were investigated within a cross-sectional comparative design. Anaemia status as well as BMI variations may have an impact on the frequency of asthma-related hospitaliztions.

Results:
Most subjects in the study were female (74.3%) and over the age of 65. Mild anaemia was the most common condition (41.7%), and (42.3%) of subjects were classified as obese and (22.7%) were overweight. Age was found to be a significant factor in asthma-related hospital admissions (p-value = 0.0002), however sex was not significant. Subjects with mild or moderate anaemia and those who were obese had a higher frequency of asthma-related hospital admissions. Furthermore, the study revealed significant differences in the mean number of asthma-related hospital admissions among the different BMI and anaemia status categories. Subjects with severe obesity had a significantly greater number of asthma-related hospital admissions with a mean of 2.21 compared with the other BMI groups (p-value= 0.029). Subjects with mild anaemia had a significantly greater number of asthma-related hospital admissions with a mean of 2.07 than those with severe anaemia (p-value=0.04). These results highlight the importance of considering comorbid conditions in the clinical assessment and management of asthma.

Conclusion:
These findings highlight that anemia and BMI abnormalities can complicate asthma management. Health care professionals should be aware of these factors when assessing severity and developing treatment plans. Further research is needed to explore the underlying mechanisms and evaluate interventions targeting anaemia and BMI to improve outcomes.

Prevalence of Vitamin D Deficiency in Saudi COPD Patients: A Single Center Observational Study

Arwa M Alqahtani , Nada A Alomrani , Amal A Alamri , Nawal A AlGubisi, Zubair Ahmed , Jaber S Alqahtani

Introduction:
Chronic obstructive pulmonary disease (COPD) is among the top three global causes of mortality. Vitamin D deficiency is frequently observed in COPD patients and is more prevalent compared to healthy controls. It has been linked to poor lung function, reduced muscle strength, and inflammation. However, no studies have explored the prevalence of vitamin D deficiency among COPD patients in Saudi Arabia. This research aim to measure the prevalence of vitamin D deficiency among Saudi COPD patients.

Methods:
A Single Center Observational Study was conducted involving COPD and PRISM patients attending pulmonary clinics at King Fahd Military Medical Complex Dhahran. Data were collected are demographic characteristics, vitamin D levels, COPD Assessment Test (CAT) scores, Frail Edmonton Scale, Modified Medical Research Council (mMRC) dyspnea scale, Hospital Anxiety and Depression Scale (HADS), dyspnea scale, and pulmonary function test variables (FEV1, FEV1/FVC). Vitamin D deficiency was defined as serum 25(OH)D < 75 nmol/L.

Result:
The study involved 18 patients, predominantly male (94.4%, n=17), all of them Saudi (Table 1). Among them, 13 were diagnosed with COPD, and all (100%) had vitamin D deficiency (Table1). The mean vitamin D deficiency value was 47.43. Only 5 patients (27.8%) met the PRISm criteria, and all of them (100%) also had vitamin D deficiency (Table 1). Moderate positive correlation between the CAT score and the dyspnea scale (r = 0.59, p = 0.01) indicating significant relationship (Figure 1). A moderate positive correlation (r = 0.46) between CAT scores and mMRC dyspnea scale scores, but it was not statistically significant (p = 0.06)(Figure 2). A moderate positive correlation was found between CAT score and HADS Anxiety Score (r = 0.45, p = 0.06)(Figure 3). The correlation between CAT score and HADS Depression Score revealed a weak (r = 0.14, p = 0.57), non-significant positive correlation.
Vitamin D deficiency is highly prevalent among COPD patients in Saudi Arabia. Routine screening for vitamin D levels and appropriate supplementation should be considered as part of comprehensive COPD management in this population.

The Prevalence of Mechanical Ventilation Modes Among Health Care Providers in the ICUs of Saudi Arabia

Fatimah I. Alsharfa, Shahad Y. Albuwaidi, Zainab A. Abuzaid, Roaa J. aljafar, Anwar M. Bin Hussain, Bashair A. Al-Fozan

Introduction:
An invasive mechanical ventilatory support is a therapeutic mainstay of intensive care units (ICUs). Throughout the coronavirus disease 2019 (COVID-19) pandemic in Saudi Arabia (SA), there was an increment in the demand for mechanical ventilators (MVs). This increment is accompanied by the fact that once there is a decision to ventilate a patient, the healthcare provider (HCP) may be exposed to various options for mode selection. Therefore, this study aims to find the prevalent modes of ventilation in the ICUs of SA and to find the basis of mode selection.

Methods:
A cross-sectional study was conducted from the 11th of February 2023 to the 8th of April 2023 to measure the prevalence of mechanical ventilation modes among HCPs working in the ICUs of SA. Data were collected using an online questionnaire distributed via social media platforms and analyzed via SPSS v.29, using descriptive statistical analyses and a chi-square test.

Results:
In this study, which involved 208 HCPs working in the ICUs of SA, the prevalent mode of ventilation was Pressure Regulated Volume Control (PRVC), representing (88.5%) of total sample, followed by Pressure Support Ventilation (PSV), representing (83.2%) of the total sample. Regarding COPD and COVID-19, PRVC remained the preferred mode. Whereas for ARDS, Assist Control/ Pressure Control (AC-PC) and PRVC were equal in percentage, representing (33.7%) of total sample. PSV dominates as the preferred mode used for weaning. Among different reasons of preference, ease of use predominates by up to (43.3%) of all responses.

Conclusions:
The prevalent mode of ventilation was PRVC, followed by PSV, AC-PC then AC-VC. PRVC dominates as the most preferred mode mainly due to ease of use then familiarity. Further evidence is required to understand reasons for preferring certain modes over others. In addition, larger sample size is needed to represent more variation in demographic data.

Awareness /Prevalence of Second Hand-Third Hand Smoking Among 3rd Trimester Women and its Relationship With Newborn Outcomes

Noura Alshahrani, Reema Abumehaid, Dr. Mohammed Alqahtani

Background:
Tobacco smoke exposure, particularly secondhand (SHS) and thirdhand smoke (THS), poses significant health risks, especially for vulnerable populations such as pregnant women and newborns. Previous studies have linked SHS and THS exposure to adverse maternal and neonatal outcomes, including preterm labor, low birth weight, respiratory complications, and developmental issues. However, awareness and prevalence of these risks remain understudied in specific regions. This study aimed to assess the prevalence of SHS and THS exposure among third-trimester pregnant women in Riyadh, Saudi Arabia, their awareness of associated risks, and the potential impact on maternal and neonatal outcomes.

Methodology:
The study focused on pregnant or postpartum Arabic-speaking Saudi females exposed to secondhand and thirdhand smoke, along with their newborns with a 325-participant included. An analytical cross-sectional study was conducted with 325 participants recruited from King Abdulaziz Medical City, Riyadh. Pregnant women in their third trimester were surveyed about SHS and THS exposure in various settings (e.g., homes, public places, and vehicles) and awareness of related health risks. Data were collected through structured questionnaires and medical record reviews. Statistical analyses, including chi-square and t-tests, were performed to evaluate associations between exposure and outcomes.

Results:
The Prevalence of SHS exposure was reported in 38.6% of households, with 46.2% of participants living with at least one smoker. THS exposure was more common (75.2%), especially in public places. On the other hand, the awareness of SHS risks was high (91.0%), with 92.4% acknowledging that THS particles harm infants. However, misconceptions about smoke residue duration and transmission were noted.

Conclusion:
This study reveals significant exposure of pregnant women to secondhand and thirdhand smoke, posing health risks. Despite awareness, continued exposure necessitates stronger interventions. Public health campaigns should focus on reducing this exposure through smoke-free policies and smoking cessation support in prenatal care, while healthcare providers must address these risks during maternal visits.

Keywords:
Secondhand smoke, Thirdhand smoke, Pregnant women, Neonatal outcomes, Awareness, Prevalence, Public health.

Evaluating the Efficacy of an Innovative Vest for Strengthening Respiratory Muscles in Healthy Individuals: A Crossover Study

Dr. Husam Alahmadi, Joori Tambosi, Razan Rajeh, Sara Almarzouq, Zeena Anwar

This research, conducted as part of the Bachelor's degree requirements in Respiratory Therapy, was awarded First Place in Scientific Research by the Faculty of Medical Rehabilitation Sciences, King Abdulaziz University, for the academic year 2024/2025.

Background:
Inspiratory muscle training (IMT) is a proven method to enhance respiratory strength and function. However, conventional IMT devices like Power Breathe have drawbacks, including high costs, limited usability during activity, and poor adherence. This study introduces a novel, wearable resistance vest designed to apply external thoracic pressure, thereby increasing respiratory workload during daily activities.

Purpose:
To evaluate the feasibility, safety, and effectiveness of an elastic resistance vest in strengthening respiratory muscles in healthy adults over three weeks.

Methods:
A crossover study with healthy male participants was conducted using a stretchable, breathable vest integrated with latex-free resistance bands. The vest featured adjustable Velcro straps at four thoracic levels and a front zipper. It was fitted to 95% of each participant's thoracic circumference at functional residual capacity, optimized using P0.1 measurements. Participants wore the vest daily with increasing durations (one hour in week 1 to two hours by week 3). Respiratory muscle strength was assessed weekly using the MicroRPM device to measure maximum inspiratory pressure (MIP) and maximum expiratory pressure (MEP). Data were analyzed using Excel 360 and SPSS v30.0.0.0. The Shapiro–Wilk test confirmed normality, and repeated measures ANOVA evaluated changes over time.

Results:
Three weeks of external thoracic loading significantly improved respiratory muscle strength. MIP showed significant improvement over time ($p = 0.029$), especially from baseline to week 3 ($p = 0.021$, $\eta^2 = 0.123$). MEP improved significantly earlier ($p = 0.011$), with gains by week 2 ($p = 0.014$) and week 3 ($p = 0.0002$, $\eta^2 = 0.243$). Individual improvement patterns varied.

Conclusion:
The innovative resistance vest significantly enhanced MIP and MEP in healthy individuals over three weeks, with no adverse effects. MEP improved earlier than MIP, indicating different muscle adaptation rates. The vest's ergonomic, adjustable design supports safe, consistent use. Further research is needed in clinical populations.

Keywords:
Innovative vest, maximum inspiratory pressure, maximum expiratory pressure, healthy individuals, respiratory muscles strength.

Effect of Non-Invasive Ventilation After Less Invasive Surfactant Administration in Preventing Bronchopulmonary Dysplasia: A Preliminary Study

Sakinah Almashhed, Ghadeer Alowiwi, Fatimah Sunbul, Ebtehal AlHaider, Ghadia Almubarak, Ruoof Alkhaldi, Sarah Aldalbahi, Narsim Alsinan

Background:
Bronchopulmonary dysplasia (BPD) remains a significant complication in preterm infants with respiratory distress syndrome (RDS). Less invasive surfactant administration (LISA) is increasingly adopted to minimize lung injury. However, the optimal mode of non-invasive ventilation (NIV) following LISA remains uncertain.

Objective:
To compare BiPAP and NCPAP in reducing the incidence of BPD in preterm infants following LISA.

Methods:
This retrospective preliminary study analyzed data from 16 preterm infants—selected from 256 screened medical records—born at less than 32 weeks' gestation and treated with surfactant using the Less Invasive Surfactant Administration (LISA) method between January 2023 and June 2025. Following LISA, infants were managed with either Bilevel Positive Airway Pressure (BiPAP) or Nasal Continuous Positive Airway Pressure (NCPAP). Collected data included gestational age, birth weight, Apgar scores, fraction of inspired oxygen (FiO_2) at the time of LISA, duration of oxygen therapy, need for intubation, length of hospital stay, and diagnosis of bronchopulmonary dysplasia (BPD). BPD was defined according to the National Institute of Child Health and Human Development (NICHD) criteria as oxygen dependency for ≥28 days in infants born at <32 weeks' gestation.

Results:
Sixteen preterm infants received less invasive surfactant administration (LISA) followed by non-invasive ventilation (NIV). The median gestational age was 30.5 weeks, and the median birth weight was 1590 g. Antenatal steroids were administered in 81% of cases. The median FiO_2 at the time of LISA was 37.5%, and the median age at LISA was 1 hour. Overall, bronchopulmonary dysplasia (BPD) occurred in 12.5% (2/16), mortality in 12.5% (2/16), and the composite outcome of BPD or death in 18.8% (3/16).

Following LISA, NIV consisted of BiPAP (n=11) or NCPAP (n=5). The incidence of BPD was similar between the groups (BiPAP 9.1% vs NCPAP 20%; Fisher's exact p=1.00). Intubation was significantly more frequent in the NCPAP group (100% vs 36% for BiPAP; p=0.034). Mortality occurred only in the NCPAP group (40% vs 0% for BiPAP; p=0.083). Median length of hospital stay was comparable between groups: 20 days (IQR 11–37) for BiPAP vs 14 days (IQR 9–49) for NCPAP (Mann–Whitney p=0.955). These findings suggest similar rates of BPD between BiPAP and NCPAP following LISA in this small cohort, with a notably higher post-LISA intubation rate observed in the NCPAP group.

Limitations and Future Directions:
This study is limited by its small sample size, reflecting the limited use of the LISA method at the hospital from which data were collected. Additionally, its retrospective design restricts both statistical power and the generalizability of the findings. Future research should include larger, prospective cohorts to more accurately assess the impact of different non-invasive ventilation (NIV) modalities following LISA.

Conclusion:
In this preliminary cohort, LISA followed by non-invasive ventilation was associated with a low overall incidence of BPD. While outcomes for BPD and mortality did not differ significantly between groups, infants supported with BiPAP after LISA required fewer subsequent intubations compared with those managed on NCPAP. These findings suggest BiPAP may offer advantages in reducing intubation after LISA, though larger studies are needed to confirm these observations.

Non-Invasive Ventilation Uses among Critically Ill Patients: Evidence from Limited-Resources Setting.

Abdulrahman S. Al Aizary, Bs, RTT, MsERC, FNIV

Background:
Noninvasive ventilation (NIV) is a cornerstone intervention for acute respiratory failure, offering effective ventilatory support without endotracheal intubation. Its role is especially significant in resource-limited settings where invasive mechanical ventilation (IMV) carries higher risks and costs.

Objective:
To assess the utilization patterns and clinical outcomes of NIV among critically ill patients in the ICU of Al Borj Hospital, Al Mukalla City, Yemen.

Methods:
This descriptive cross-sectional study included 53 adult ICU patients with acute or acute-on-chronic respiratory failure who received NIV between October 2023 and September 2024. Data on demographics, diagnoses, NIV parameters, and outcomes were collected prospectively and analyzed using descriptive and inferential statistics.

Results:
The study sample showed that 64.2% males, mean age 48.1 ± 16.0 years. NIV alone was used in 50.9% of patients, while 32.1% required escalation to invasive mechanical ventilation (IMV) . Overall, 69.8% were discharged and 30.2% expired. Survival was significantly higher among patients managed with NIV only compared to those requiring combined NIV + IMV ($p < 0.001$). Mechanical ventilation use was strongly associated with mortality ($p = 0.002$). Post-extubation NIV was used in 17% of cases.

Conclusion:
NIV is an effective frontline strategy for selected ICU patients, reducing the need for invasive ventilation and improving discharge rates. In low-resource environments such as Yemen, optimizing NIV use through standardized protocols and staff training could enhance patient outcomes and resource utilization.

Keywords:
Noninvasive ventilation, acute respiratory failure, ICU outcomes, Yemen, mechanical ventilation, CPAP.

Effect of a Standardized Mechanical Ventilation Liberation Protocol on Extubation Outcomes and Icu Stay: A Prospective Cohort Study in Icu Of Qhn.

Al-Musawi Alawi , Al-Khalifa Ahmed , Al-Faraj Fatimah , Muhanna Abdullah , Al-Muallim Amal , Al-Dahnim Entisar , MuhammedHussine Raed , Al- Nass Ali

Background:
Prolonged mechanical ventilation (MV) in critically ill patients is linked with expand risks including ventilator associated complications, extended ICU stays, and higher mortality. Conversely, premature extubation can result in failed extubation and increased morbidity. Protocolized weaning strategies have been shown to improve clinical outcomes. To measure the impact of a structured MV liberation protocol on extubation success, MV duration, and ICU length of stay in adult patients across Qatif Health Network (QHN) hospitals.

Material and Methods:
This prospective observational cohort study included patients ventilated for ≥24 hours between April 2024 and April 2025. Patients were grouped into pre-protocol (retrospective, physician-directed weaning) and post-protocol (prospective, structured protocol including sedation vacation, spontaneous breathing trial [SBT], and extubation checklist). Analyses included chi-square and t-tests, multivariable logistic regression.

Results:
A total of 284 patients were analyzed (135 pre-protocol, 149 post-protocol). Post-protocol patients had significantly higher SBT success (57.7% vs. 42.3%, $p < 0.001$), lower reintubation rates (13.3% vs. 86.7%, $p < 0.001$), and shorter MV duration (mean reduction: 2.53 days, $p < 0.001$). ICU length of stay was also reduced (mean reduction: 3.06 days, $p = 0.007$).

Conclusions:
The structured MV liberation protocol was associated with improved extubation outcomes and reduced both MV duration and ICU stay. These findings support broader adoption of standardized weaning protocols to improve patient outcomes and ICU efficiency.

Assessing The Efficacy of an Innovative Prototype of A Wearable Transcutaneous Carbon Dioxide Monitor in Healthy Subjects.

Alzahrani Lama - BcRT, Almutairi Shahad - BcRT, Alharbi Rana - BcRT, Nogali Alaaa - BcRT, Alahmadi Husam - Assistance Professor, PhD in Respiratory Therapy

Objective:
This study aimed to develop a wearable device capable of accurately measuring transcutaneous CO_2 levels and validate its performance against established hospital-grade $EtCO_2$ and $TcCO_2$ monitoring systems.

Methods:
A prospective diagnostic accuracy study was conducted using a prototype of a wearable (watch like) transcutaneous CO_2 device incorporating an SCD40 sensor capable of measuring CO_2, temperature, and humidity. The device was tested on healthy individuals (ages 18-60, BMI 18.4-39.9 kg/m², non-smokers without chronic respiratory conditions) across three experiments. The first experiment compared the prototype readings with a capnography ($EtCO_2$) device reading in three different individuals during normal, hypoventlition and hyperventilation breathing patterns. In the second experiment, the prototype was assessed against a hospital-grade TcCO2 monitor in which both devices placed on the hand of healthy individual, who was instructed to perform tidal breathing. The levels of CO_2 (ppm) and $TcCO_2$ (mmHg) from both devices were collected at five-minute intervals over one hour. The third experiment involved the prototype with a 3D printed case and an integrated heating system to expedite measurement stabilization. The identical protocol employed in the second experiment was followed. CO_2 levels were obtained from both devices at baseline and 5-minute intervals for 100 minutes. The statistical analysis involved regression techniques to compare the performance of the prototype with thet of standard devices.

Results:
The findings from the first experiments comparing the prototype with $EtCO_2$ showed a robust consistency. During hyperventilation induction, both devices exhibited an initial increase in readings followed by a decline in CO_2 levels, indicative of the rapid washout of excess CO_2. Conversely, during hypoventilation, a gradual increase in CO_2 levels was observed with both devices. These findings confirm the successful utilization of the SCD40 sensor in measuring CO_2 levels in exhaled air. In the second experiment, when comparing the initial prototype with $TcCO_2$ on the skin, fluctuations in the prototype's readings within the 900-1600 ppm range were observed, with a plateau phase noted at approximately 1400 ppm. These fluctuations suggest the possibility of air leaks within the system. Consequently, a 3D-printed case incorporating an O-ring silicon was developed to address these issues, alongside the implementation of a heating system aimed at shortening the response time. In the third experiment, employing the new case alongside the heating system resulted in more stable and less varied readings for the prototype, ranging between 1000-1200 ppm. Remarkably, these results were consistent with those obtained using the $TcCO_2$ device. However, the heating system did not significantly accelerate the attainment of the steady state phase.

Conclusion:
Our wearable CO_2 monitor prototype provides reliable, noninvasive, cost-effective, continuous transcutaneous CO_2 monitoring in healthy participants with varied breathing patterns. It could enable the early detection of acute or acute-on-chronic hypercapnic exacerbations in conditions such as COPD, cystic fibrosis, neuromuscular disorders, obesity hypoventilation syndrome, and severe uncontrolled asthma. If deemed effective, its use may reduce unnecessary hospital and ICU admissions, invasive mechanical ventilation and its related complications, and overall healthcare costs.

Prevalence, Clinical Correlates, and Small-Airway Features of Preserved Ratio Impaired Spirometry in a Saudi Hospital-Based Cohort

Nowaf Y. Alobaidi and Ali Altoraibili

Abstract Content:
Preserved ratio impaired spirometry (PRISm) is an under-recognized spirometric pattern characterized by reduced FEV_1 with a preserved FEV_1/FVC ratio. It represents a heterogeneous condition encompassing both restrictive and early obstructive airway phenotypes. Data from the Middle East are limited despite the high prevalence of obesity and metabolic disease that may influence PRISm expression.

Methods:
A retrospective cross-sectional study was conducted at King Abdulaziz Hospital, National Guard Health Affairs, Al-Ahsa, Saudi Arabia. Adults (≥ 18 years) who underwent diagnostic spirometry between 2014 and 2023 were included if tests met ATS/ERS quality criteria. Using the lower limit of normal (LLN; z-score <-1.645), participants were classified into five groups: Normal, PRISm-Restrictive, PRISm-Non-restrictive, Obstructive, and Restrictive (low FVC). Small-airway dysfunction (SAD) was defined as $FEF_{25–75}$ % < LLN (z-score <-1.645).

Results:
Among 592 adults (mean age 55.2 ± 10.1 years, 57.4% female), normal spirometry accounted for 53.9%, restrictive PRISm 26.2%, non-restrictive PRISm 3.7%, obstructive 4.4%, and restrictive

11.8%. BMI differed significantly ($p < 0.001$), highest in non-restrictive PRISm (37.2 ± 11.2 kg/m²). $FEF_{25–75}$ % pred was lowest in non-restrictive PRISm (56.3 ± 7.6) and obstructive (29.1 ± 10.9) patterns ($p < 0.001$). SAD occurred in 50% of non-restrictive PRISm, 23.9% of restrictive PRISm, and 96% of obstructive cases ($p < 0.001$). PRISm was associated with diabetes (51.3%), obesity (36%), and asthma (29%) (all $p < 0.05$). Symptoms were mild and did not differ significantly among groups.

Conclusion:
PRISm was common among adults referred for spirometry in Saudi Arabia, dominated by the restrictive subtype. Non-restrictive PRISm showed low $FEF_{25–75}$ % pred despite preserved FVC, likely suggesting an early small-airway impairment. Obesity, diabetes, and asthma were key correlates, underscoring the heterogeneity and clinical importance of PRISm in populations with high metabolic burden.

Efficacy of Awake Prone Positioning in Non-COVID Acute Hypoxemic Respiratory Failure: A Systematic Review and Meta-Analysis

Sama Abdulkadir Al Muslim , Duaa Abdulkadir Al Muslim

Background:
Prone positioning is an established strategy for improving oxygenation in intubated patients with acute respiratory distress syndrome (ARDS) and has shown promising results in awake patients with COVID-19-related respiratory failure. Nonetheless, its efficacy in awake, non-COVID patients with acute hypoxemic respiratory failure (AHRF) remains inadequately defined.

Objective:
To evaluate the efficacy of awake prone positioning (APP) in non-COVID AHRF in terms of oxygenation, intubation rate, and mortality.

Methods:
A systematic search of PubMed, Embase, Scopus, and the Cochrane Library was conducted through August 2025. Eligible studies included randomized controlled trials (RCTs) and observational studies reporting on APP in adult patients with non-COVID AHRF. A meta-analysis was conducted using a random-effects model.

Results:
Eight studies (n = 612 patients) were included. APP significantly improved oxygenation (PaO /FiO, increase of 46.2 mmHg; 95% CI: 32.1-60.3; 1 = 45%). APP was associated with a reduced intubation rate (RR 0.71; 95% CI: 0.54- 0.93; 1° = 38% b ut had no significant effect on mortality (RR 0.91; 95% CI: 0.68-1.21).

Conclusion:
APP appears to be a safe and effective strategy to improve oxygenation and reduce intubation in non-COVID AHRF. Further large-scale trials are warranted.

Exploring the Need for Post-ICU Clinics

Hassan Y. Aljohani PhD, Deema Almutairi, Raghad Alanazi, Ruba Alzahrani, Bader Alraqebah, Basmah Alluhaydan

Background:
Post intensive care unit (ICU) survivors have many long-term emotional, physical and cognitive complications after their ICU discharge. Which can result in frequent readmission to the hospital with low health-quality. This research aims to explore the needs of ICU survivors, as well as assessing the need for initiating post-ICU clinics.

Methods:
This research used qualitative structured on-line or in-person interviews with physicians from different sub-specialties in National Guard Hospitals. Grounded theory was used to analyze the results and produce themes for the interviews and coding yielded results of the study.

Results:
Sixteen (16) physicians were interviewed. 7 physicians were male (44%) and 9 were female (56%). Interviewed specialties were critical care (50%), medicine (50%). All participants except two ICU physicians agreed on the importance of ICU clinics especially for patients with chronic conditions and long ICU stay. Participants think that education and psychological support are the most needed care service while burdens are mostly due to transportations and adherence.

Conclusion :
Post ICU clinic is essential to be implemented. Education, emotional support, and facilitation of conduction using virtual means would increase adherence to the clinic. Moreover, majority of participants expected the implementation of post ICU clinic in the future due to the increased awareness of improving quality of life and public health issues which is supported by National Saudi 2030 vision.

Reduced response of β2-Adrenoceptor agonist in Severe Asthma

Jameel Hakeem, Michael Biddle, Peter Bradding, Yassine Amrani

Rationale:
Impaired β2-AR function in airway smooth muscle (ASM) cells is a possible mechanism for poor efficacy of β2-agonist therapy in severe asthma.

Methods:
ASM cell responsiveness to β2-agonists in healthy and severe asthmatic subjects was investigated by their ability to inhibit chemokine production & induce STC-1 induction, promote collagen gel relaxation, produce cAMP accumulation, induce phosphorylation of VASP, and modulate transcriptome response using RNA-seq. Also, altering β2-AR expression was assessed to determine if it rescued β2-AR function in severe asthma.

Results:
Healthy ASM cells with albuterol dose-dependently inhibited CCL5, PTX3, and CXCL-10 production induced by TNFα, respectively. In contrast, albuterol failed to inhibit chemokine production in severe asthma ASM cells treated with TNFα. Albuterol-induced STC-1 production was significantly reduced in ASM cells from severe asthmatics when compared to healthy ASM cells. Albuterol reduced the spontaneous contraction of healthy cell-embedded collagen gels by 50.1%, while no effect was seen in severe asthmatic cell-embedded collagen gels. In addition, β2-agonists-induced cAMP production and VASP phosphorylation at ser157 or ser239 were reduced in ASM cells from severe asthmatics when compared to cells from healthy subjects. The RNA-Seq analysis uncovered a profound difference in the transcriptomic response associated with β2-AR activation in ASM cells in severe asthma compared to healthy controls, with a number of genes and associated different pathways being absent or reduced in severe asthma. Interestingly, overexpressing β2-AR in severe asthmatic ASM cells rescued their responsiveness to β2-agonists to inhibit chemokine production and induce cAMP production.

ABSTRACTS

*In order of submission date

THE BEST OF aarc 2026 DAMMAM, KSA 15-17 JANUARY 2026

The effectiveness of Mechanical Insufflation-Exsufflation device among adults of post cardiac surgery patients: A Randomized clinical trial

Nawar Almuntashiri , Saud Alqahtani, Ahmed Alghamdi , Abdulrahman Aljamaan

Background:
Postoperative pulmonary complications (PPCs) are among the most frequent and serious problems after cardiac surgery, occurring in 1.9–7.9% of patients and leading to increased morbidity, mortality, and healthcare costs. These complications—such as atelectasis, pneumonia, and pleural effusion—arise primarily from secretion retention, pain, and impaired cough mechanics following sternotomy and anesthesia. The Mechanical Insufflation-Exsufflation (MI-E) device has been proven to enhance airway clearance and cough peak flow in patients with neuromuscular and critical care conditions, but its role in post-cardiac surgery recovery remains under-investigated.

Aim:
To evaluate the effectiveness of MI-E therapy in reducing postoperative pulmonary complications compared with conventional incentive spirometry (IS) among adult patients following cardiac surgery.

Methods:
This randomized clinical trial will be conducted in the Cardiovascular Intensive Care Unit (CVICU) at King Fahad Medical City, Riyadh. Eligible adult patients within 24 hours post-extubation will be randomly assigned to either the MI-E group or the IS control group. The MI-E group will receive twice-daily sessions (5–10 cycles per session, with rest periods), while the IS group will perform the standard hospital protocol (8–12 sessions in the first 48 hours). Primary outcomes include the incidence of PPCs (atelectasis, pneumonia, pleural effusion, and chest pain) as defined by the European Perioperative Clinical Outcome (EPCO) criteria. Secondary outcomes include oxygen requirements, hospital length of stay (LOS), and readmission rate. Data will be collected through the EPIC electronic database and analyzed using descriptive and inferential statistics (chi-square and independent-sample t-tests) with $p < 0.05$ considered significant.

Expected Results:
It is anticipated that MI-E therapy will significantly reduce the incidence of PPCs compared with IS (expected rates ≈ 10–15% vs 30–35%, respectively). Oxygen demand is expected to decrease by 20–25%, and mean hospital LOS by 1–2 days in the MI-E group. Improvements in oxygen saturation and cough effectiveness are expected without adverse hemodynamic effects.

Conclusion:
If validated, MI-E may provide a superior, evidence-based method for postoperative airway clearance, improving clinical recovery and reducing healthcare burden in cardiac surgery patients. The findings could support integration of MI-E into standard postoperative respiratory care protocols.

Keywords:
Mechanical Insufflation-Exsufflation, Incentive Spirometry, Cardiac Surgery, Pulmonary Complications, Respiratory Therapy, Airway Clearance.

Behind the Cut: How Much Do Mothers Know About C-Section Respiratory Risks?

Ahmad Omar Al-Shahrani, Abdullah Ibrahim Aljohani, Ahmad Faris, Jaber S. Alqahtani

Introduction:
C-sections are widely performed, yet mothers' awareness of their risks remains limited. This study assessed knowledge gaps and attitudes to improve patient counseling.

Methods:
We conducted a cross-sectional survey among 552 women aged 18 years and older to evaluate their perceptions of cesarean section safety compared to vaginal delivery, assess their knowledge of associated maternal and neonatal risks, and examine their attitudes toward cesarean delivery. The collected data were analyzed using descriptive statistics and Fisher's Exact Test, with statistical significance set at $p < 0.05$.

Results:
The study included 552 mothers, predominantly aged 18–30 (51.4%), with 64.7% having completed high school. Most reported 1–4 pregnancies (80.6%) and 0–5 births (60.5%). Only 22.5% believed C-sections were safer for babies than vaginal delivery, while 77.5% disagreed or were unsure. 56.3% of participants received explanations of risks/benefits from healthcare providers, while 43.7% did not. Among those with prior C-sections, 58.9% would consider vaginal birth in future pregnancies, while 41.1% would not. Feelings toward C-sections were mostly neutral (42.2%) or negative (42.6%), with only 15.2% positive. Regarding the perceived maternal risks of cesarean section, aspiration pneumonia was identified by 17.6% of respondents, hypoventilation or respiratory depression by 29.2%, and sepsis by 24.5%. In terms of neonatal risks, respiratory distress syndrome was noted by 19% of participants, transient tachypnea by 21.6%, and asthma risk by 17%.

Conclusions:
Mothers demonstrated limited awareness of respiratory risks associated with cesarean section, often expressing mixed or negative perceptions. Targeted educational initiatives are essential to bridge knowledge gaps and empower mothers to make informed decisions regarding their mode of delivery.

Loneliness and Its Association with Nicotine Dependence among Smokers in Saudi Arabia

Razan Alqahtani, Leen Alnaam, Hessa Altwijri, Jaber S. Alqahtani

Introduction:
Loneliness has been associated with smoking behavior; however, its specific link to nicotine dependence, particularly across different forms of smoking such as e-cigarette use, remains insufficiently understood. Gaining insight into this relationship may enhance the effectiveness of smoking cessation strategies by addressing underlying psychosocial factors.

Methods:
A cross-sectional study was conducted among 653 adult smokers in Saudi Arabia, recruited through convenience sampling via social media and public outreach. Data were collected using a self-administered online survey, which included the three-item UCLA Loneliness Scale, the Penn State Nicotine Dependence Index (PSNDI), and demographic questions.

Results:
A total of 653 smokers participated in the study, the majority of whom were cigarette users 380 (58.2%), male 597 (91.4%) and aged 18–30 years 423 (64.8%). Most participants were single 461 (70.6%) and resided in the Eastern region 339 (51.9%), while 138 (21.1%) reported having comorbidities. Among the participants, 240 (36.8%) were classified as experiencing loneliness, including 129 (33.9%) of cigarette users and

111 (40.7%) of e-cigarette users. Moderate to high nicotine dependence was reported in 65.8% of cigarette users (36% were lonely) and 74.8% of e-cigarette users (42% were lonely). A statistically significant positive correlation was observed between loneliness and nicotine dependence among e-cigarette users (r = 0.16, p = 0.007) and in the overall sample (r = 0.12, p = 0.002), but not among cigarette smokers (r = 0.09, p = 0.09). Logistic regression analysis identified the central region (p = 0.002) and presence of comorbidities (p = 0.004) as significant predictors of loneliness among e-cigarette users. In contrast, no significant predictors were found among cigarette users.

Conclusions:
The prevalence of loneliness among smokers was notably high, reaching 37%. There was a positive correlation between loneliness and nicotine dependence, particularly among e-cigarette users. Although the association was not statistically significant among cigarette smokers, a clear pattern was observed. Addressing loneliness in cessation programs may reduce nicotine dependence and improve psychosocial well-being among smokers in Saudi Arabia.

The Change of Nicotine Dependence Pre- and During Ramadan Among Smokers in Saudi Arabia

Abdulaziz Meshal Albogami, Nader Naif Alotaibi, Asaad Muslih Alsuhaymi, Musaad Mansour Alqahtani, Jaber Alqahtani

Background:
Tobacco use remains a critical health concern in Saudi Arabia, with 21.4% of adults smoking. Ramadan presents a unique natural experiment due to its enforced daily fasting and smoking abstinence from dawn to sunset. While previous studies have examined smoking prevalence and the symptoms during fasting, there is limited research on how nicotine dependence changes during Ramadan, particularly among e-cigarette users. This study aims to fill this gap by comparing dependence levels before and during Ramadan among traditional and e-cigarette users.

Methods:
This cross-sectional study was conducted during Ramadan to assess changes in nicotine dependence among adult smokers across all regions of Saudi Arabia. We recruited 658 participants via online (social media, WhatsApp) and offline (health centres, universities) channels. Eligible participants were 18 years or older and current users of traditional cigarettes or e-cigarettes. Data were collected using a structured, self-administered questionnaire via Google Forms, covering demographics, lifestyle factors, nicotine dependence (measured by the Fagerström Test for Nicotine Dependence [FTND] and the Penn State Nicotine Dependence Index [PSNDI]), and withdrawal symptoms.

Results:
A total of 658 smokers from Saudi Arabia were included in the study, predominantly male (87.1%) and primarily young adults (74% aged 18–30 years). The sample comprised 271 e-cigarette users and 387 traditional cigarette users. E-cigarette users demonstrated greater improvement (49.4%) compared to traditional cigarette users (32.3%), with statistical analysis revealing significant reductions in nicotine dependence scores for both groups (e-cigarettes: mean reduction = 0.58, p < 0.001; traditional cigarettes: mean reduction = 0.27, p = 0.0045). Around 40.6% of participants reported withdrawal symptoms, most commonly cravings (8.7%). There were significant associations between changes in nicotine dependence and both gender (p = 0.015) and age (p = 0.020), with no significant influence observed from regional, educational, or socioeconomic factors.

Conclusion:
This study found significant reductions in nicotine dependence among traditional and e-cigarette users during Ramadan, particularly for e-cigarette users. Male participants showed greater improvements, but the predominance of males' limits generalizability. Younger individuals experienced more pronounced reductions, while traditional smokers had fewer notable changes. These results highlight Ramadan as a key opportunity for tobacco cessation interventions, especially for young male smokers. Future research is needed to support cessation efforts after Ramadan and to develop effective interventions for ongoing support.

Understanding of Stroke Risk Among Smokers in Saudi Arabia

Fahad Nawar Alzaidi, Hussain Ibrahim Alsamdani, Muath Abdulrahman Alamri, Ali Mohammed kheder, Jaber S. Alqahtani

Background:
Stroke is a common and fatal condition impacting millions worldwide. Understanding the risk factors, symptoms, and consequences at an earlier stage, specifically in highly at-risk populations such as smokers, is crucial for mitigating the stroke burden.

Methods:
A cross-sectional study was conducted in Saudi Arabia on more than 1000 smokers. The survey was randomly shared across the kingdom. Multiple logistic regression models were applied to assess the association and find the variables associated with poor stroke awareness.

Results:
The study included 1029 smokers, with 88% (904) being male. The majority (61%; 630) are between the ages of 18 and 30 years, with a university degree (84%, 862). Cigarettes (33.9%; 349), shisha (25.9%; 267), and e-cigarettes (40.1%; 413) were the most common smoking types. About 30% of smokers have never heard of stroke, and 44% were unaware that stopping smoking can prevent stroke. Smokers (55%) perceive smoking as the top risk factor, followed by heart disease (41%), and high blood pressure (40.8%), while 26% of the smokers did not identify any risk factors. Around 58% of the smokers did not identify any stroke symptoms. Only 20% of smokers were capable of identifying 50% of both stroke risk factors and symptoms. Around 8% reported all stroke-related consequences, whereas 44% were unable to identify any. Current smokers were more likely than ex-smokers to identify ≥1 stroke risk factor (OR = 1.95, p = 0.001), with no significant associations found for other variables. Males, university degrees, and current smokers were the only significant predictors for the identification of ≥1 stroke symptom. University education, current smokers, employment, and smoking types were significant predictors in identifying ≥1 stroke consequence. Compared to E-cigarette users, cigarette smokers exhibited twice the awareness of stroke consequences (OR = 2.01, p = 0.001), whereas shisha smokers demonstrated lower awareness (OR = 0.63, p = 0.01).

Conclusions:
Smokers' awareness of stroke in Saudi Arabia is suboptimal. Targeted educational and smoking cessation initiatives are essential to address this gap and mitigate the impact of smoking-related strokes in Saudi Arabia.

Effect of Smoking on Physical Activity and Mental Health among Saudi Adults: An Observational Study

Hadeel Hussain Abuzaid, Dana Eid aldhafeeri, Asala Mansour Aljohani , Jaber S. Alqahtani

Background:
Smoking is a major modifiable risk factor for various diseases, especially for non-communicable diseases and issues related to mental health. Physical activity improves health and well-being and has been linked with reducing the risks of different chronic diseases. This study aims to assess the influence of smoking on physical activity and mental health among adult residents of Saudi Arabia.

Methods:
A total of 102 participants were recruited between November 2023 and March 2024 for this observational cross-sectional study. Physical activity of smokers and non-smokers was assessed using the International Physical Activity Questionnaire-Short Form (IPAQ-SF) and a Yamax SW200 pedometer. The Patient Health Questionnaire-9 (PHQ-9) for depression was used to evaluate mental health, and the Generalized Anxiety Disorder-7 (GAD-7) scale was used for anxiety scoring.

Results:
While there was no significant difference in self-reported physical activity levels between smokers and non-smokers, non-smokers

Prevalence of Vitamin D Deficiency in Saudi COPD Patients: An Interim Analysis

Nada A Alomrani, Arwa M Alqahtani, Amal A Alamri, Jaber S. Alqahtani

Background:
Chronic obstructive pulmonary disease (COPD) is a leading cause of morbidity and mortality worldwide. Vitamin D deficiency is commonly observed in COPD patients and has been linked to poorer outcomes, including reduced lung function and increased exacerbations. However, data on its prevalence among COPD patients in Saudi Arabia remain limited.

Methods:
A single-center observational study was conducted at the pulmonary clinics of King Fahd Military Medical Complex, Dhahran, involving patients with COPD and Preserved Ratio Impaired Spirometry (PRISm). Data collected included demographics, serum vitamin D levels, COPD Assessment Test (CAT) scores, Modified Medical Research Council (mMRC) dyspnea scale, Frail Edmonton Scale, Hospital Anxiety and Depression Scale (HADS), and pulmonary function parameters (FEV_1, FEV_1/FVC). Vitamin D deficiency was defined as serum 25(OH)D < 75 nmol/L.

Results:
Eighteen Saudi patients were enrolled, predominantly male (94.4%, n = 17). Thirteen were diagnosed with CO.

Oropharyngeal swallowing physiology and safety in patients with Idiopathic Pulmonary Fibrosis: a consecutive descriptive case series

Dr. Amal Alamer , Dr. Rhys Jones ,Dr. Michael Drinnan , Prof. A John Simpson ,Prof Mike Griffin , Joanne M Patterson , Prof. Chris Ward , Dr. Ian A Forrest

This study has been previously presented as a poster presentation in the European Respiratory Society (ERS International Congress 2020, an oral presentation at the British Thoracic Society (BTS), winter meeting, 2021 and published in a peer-reviewed paper, BMC medicine 2022.

Introduction:
Dysphagia occurs in multiple respiratory pathophysiologies, increasing the risk of pulmonary complications secondary to aspiration. Reflux associated aspiration and a dysregulated lung microbiome is implicated in Idiopathic Pulmonary Fibrosis (IPF), but swallowing dysfunction has not been described. We aimed to explore oropharyngeal swallowing in IPF patients, without known swallowing dysfunction.

Methods:
Fourteen consecutive outpatients with a secure diagnosis of IPF were recruited and the 10-item Eating Assessment Tool (Eat 10) used to assess patient perception of swallowing difficulty. Oropharyngeal swallowing was assessed in ten patients using Videofluoroscopy Swallow Studies (VFSS). The studies were rated using validated scales: Penetration-Aspiration Scale (PAS); standardised Modified Barium Swallow Impairment Profile (MBSImP).

Results:
EAT-10 scores indicated frank swallowing difficulty in 4/14 patients. Videofluoroscopy Studies showed that 3/10 patients had airway penetration, and one aspirated liquid without a cough response. Median MBSImp for oral impairment was 5, range [3-7] and pharyngeal impairment 4, range [1-14] indicating, overall mild alteration to swallowing physiology.

Conclusion:
We conclude that people with IPF can show a range of swallowing dysfunction, including aspiration into an unprotected airway. To our knowledge, this is the first report on swallowing physiology and safety in IPF. We believe a proportion of this group may be at risk of aspiration. Further work is indicated to fully explore swallowing in this vulnerable group.

Parental Awareness of First Aid for Drowning and Choking Among Saudi Parents: A Cross-Regional Comparison Between Riyadh and the Eastern Region

Dr. Amal Alamer , Ms. Shahad Alsarhani, Ms. Maryam al-Towaileb, Ms. Luluwh Abu Sharifah, Ms. Raneem Alzahrani

Background:
Drowning and choking are leading causes of unintentional injury among children worldwide. Parents are the primary caregivers, their knowledge in first aid (FA) is crucial. Therefore, this study aims to investigate parents FA awareness among Eastern region and Riyadh region and assess the effect of various factors on it. This study is one of the first to compare parental awareness of drowning and choking FA across two cities in Saudi Arabia, aiming to identify whether geographical location influences awareness level or not.

Methods:
A prospective cross-sectional study was conducted in Riyadh and the Eastern Region using a pre-validated, self-administered electronic Arabic questionnaire to assess Saudi parents' knowledge and awareness of first aid (FA) for drowning and choking in children. The questionnaire was distributed online via social media platforms, including WhatsApp and Twitter. Participants were recruited using convenience sampling.

Result:
A total of 509 parents were recruited, with 38.8% from Riyadh and 61.2% from the Eastern Region; the majority were middle-aged and highly educated. A key regional difference was environmental exposure, with 53.5% of Eastern Region participants living near water bodies compared to only 3% in Riyadh. More than half of the participants (56.1%) had witnessed drowning or choking incidents, yet 66% had never attended a first aid course, and 27% were unaware of the Saudi Red Crescent's emergency number. While 57% demonstrated a moderate level of first aid awareness, many parents reported incorrect practices in managing drowning and choking events.

Conclusion:
Although parents demonstrated a moderate level of awareness in both regions, there is a need for increased knowledge and education to better inform the community about appropriate practices and actions during home injuries to prevent mortality.

Barriers to Choosing Respiratory Therapy as a Career Among First-Year University Students in Saudi Arabia

Omar Alghamdi, Abdulaziz Alqahtani, Omar Alqarni, Fahad Alshishaee, Mushabbab Alahmari

Background:
Respiratory therapy (RT) is a vital but often under-recognized healthcare profession. Limited awareness and misconceptions may contribute to the shortage of RT professionals. This study explored barriers influencing the decision to pursue RT as a career among first-year university students in Saudi Arabia.

Objectives:
To identify and analyze the perceived barriers preventing first-year students from selecting respiratory therapy as a career and to assess the influence of gender and family exposure to respiratory illness on these perceptions.

Methods:
A cross-sectional survey was conducted among 1,258 first-year students across various universities in Saudi Arabia. Data were collected using an online questionnaire via Google Forms. The survey included demographic items, Likert-scale statements on perceived barriers, and an open-ended question. Quantitative data were analyzed using descriptive statistics and chi-square tests. Thematic analysis was applied to qualitative responses.

Results:
Significant gender differences were found in perceptions of respect, income, exposure, and career satisfaction. Males perceived RT as more respected and better compensated, while females reported more concern about job satisfaction. Students with family exposure to respiratory illness were more likely to consider RT as a career but also expressed greater concern about infection risk. The most frequently cited qualitative themes included lack of exposure (67 mentions), limited education about RT (60), and insufficient public awareness (53).

Conclusion:
Multiple personal and perceptual barriers influence students' career decisions regarding RT. Targeted awareness campaigns, curriculum integration, and early exposure opportunities are recommended to enhance the appeal of respiratory therapy careers.

Enhancing Respiratory Outcomes: The Role of Chest Vest Therapy in Reducing Hospital Stay among Pediatric Patients with Primary Ciliary Dyskinesia (PCD) and Cystic Fibrosis (CF) at KFAFH

Dr. Fouad Almutairi - Rt. Hani Alsyali - Rt. Raghad Abulkhair - Rt. Modhi AlHariqi - Rt. Josephine Malgapo - Rt. Badr Almqati - Rt. Abeer AlQahtani - Rt. Razan Mobarak - Rt. Maisa Alshamrani - Rt. Asala Hakami

Background:
Primary Ciliary Dyskinesia (PCD) and Cystic Fibrosis (CF) are chronic conditions associated with impaired mucociliary clearance, leading to recurrent infections and prolonged hospitalization. High-Frequency Chest Wall Oscillation (HFCWO), commonly known as chest vest therapy, is used to enhance airway clearance. This project aimed to evaluate the impact of chest vest therapy on hospital length of stay among pediatric PCD and CF patients at King Fahad Armed Forces Hospital in Jeddah.

Methods:
A retrospective quality improvement (QI) project was conducted between April and October 2025. Medical records of 64 pediatric patients with PCD or CF who received HFCWO therapy were reviewed. Data included age, diagnosis, treatment frequency (every 4–6 hours), session duration (10–15 minutes), and hospital length of stay. Analysis was performed using descriptive statistics within a PDSA framework to identify trends and potential improvements.

Results:
Regular implementation of HFCWO sessions was associated with a reduction in average hospital stay compared to historical outcomes with conventional physiotherapy. Both groups demonstrated good tolerance with no reported adverse events.

Conclusion:
HFCWO appears to be an effective adjunct for improving secretion clearance and reducing hospital stay in pediatric PCD and CF populations. Further prospective studies are recommended to establish standardized protocols.

Keywords:
HFCWO, chest vest therapy, PCD, CF, pediatric airway clearance.

References:
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Graph: https://ibb.co/cXgfbqKq

Adverse pulmonary related events experienced by home care patients: a scoping review of the literature

Rouwaida Al-Bogami, Arwa Alanazi, Sara Alharbi, Noura Alasmari, Shahad Alghamdi, Fatma Algoaib, Rehaf Alnajashi, Supervisor: Dr. Taha Ismail

Background:
Respiratory home care supports individuals with breathing disorders like COPD and asthma through medical treatments and equipment aimed at improving quality of life. However, the adverse events may arise from disease progression or treatment issues, highlighting the need for effective risk management to ensure patient safety.

Purpose:
This study aims to explore the types associated with pulmonary complications in home-care settings.

Methodology:
This scoping review, registered with PROSPERO, systematically identified and analyzed English-language primary studies published from 2025 onward on adverse pulmonary events in home-care patients. Using PubMed and Google Scholar, the review followed Arksey and
O'Malley's framework, with screening conducted via Covidence, all references were managed and arranged manually, and study selection was performed by independent reviewers.

Impact of Point-of-Care Ultrasound on Clinical Outcomes in Acute Onset Dyspnea: A Systematic Review and Meta-Analysis of Randomized Control Trials

Saaid Mounzer Mouazen, Baraah Saad Alsaedi, Mohammed Ahmed Alabdulqader, Lama Omar Badghish, Milan Adeeb Altwegri, Ethar Talat Albukhari, Hootaf Saeed Bafhaid, Osama Fayez Almatrafi, Ryan Osama Alobaidy, Dena Mohammed Bahathiq, Anas Khalil

Background:
Acute dyspnea is a prevalent complaint in the emergency department (ED), presenting a diagnostic challenge due to its extensive differential diagnosis and the necessity for immediate evaluation. Conventional diagnostic methods can delay treatment, while point-of-care ultrasound (PoCUS) offers a rapid, bedside diagnostic alternative.

Objective:
This study aims to evaluate PoCUS's effect on clinical outcomes, including time to diagnosis, length of stay (LOS), diagnostic accuracy, and other clinical parameters in patients presenting with acute dyspnea to the ED.

Methods:
A comprehensive search of PubMed, Google Scholar, Web of Science, and the Cochrane CENTRAL database was conducted in September 2024. Only English language randomized controlled trials (RCTs) evaluating PoCUS in patients with acute dyspnea arriving at the ED or ICU were included. Two reviewers independently screened titles and abstracts using Rayyan, followed by full-text assessment by another pair of reviewers. Four researchers independently performed data extraction. Study quality was evaluated using the Cochrane risk-of-bias tool. Meta-analysis was performed using Stata with a random-effects model; heterogeneity was assessed using the I2 statistic.

Results:
Ten RCTs involving 2,710 patients were included. PoCUS significantly reduced time to diagnosis compared to conventional methods in most included studies. A meta-analysis found a statistically significant drop in hospital LOS (mean difference:-1.66 days; 95% CI:-2.93 to-0.39; p = 0.01). The PoCUS group demonstrated significantly greater diagnostic accuracy (pooled OR: 2.72; 95% CI: 2.24–3.30). Treatment time, mortality, and readmission were affected unevenly among studies, however.

Conclusion:
PoCUS improves diagnostic accuracy and accelerates diagnosis in acute dyspnea, although its impacts on outcomes such as mortality and LOS remain inconsistent. More studies are required to evaluate long-term advantages and standardize its clinical application.

Patterns of Hookah Use and Digital Advertisement Exposure Among Adults in Saudi Arabia

Mohammed M. Alqahtani, Mutab F. Alotaibi, Khaled A. Alharbi, Khalid M. Aldulhum

Background:
In Saudi Arabia, Hookah, also known as shisha or argileh, is a popular tobacco product with significant health impacts. This study investigates how social media influences perceptions and behaviors towards Hookah among the adult Saudi population, focusing on the exposure to tobacco advertisements on various digital platforms. It aims to understand the potential role of social media in shaping Hookah-related attitudes and practices.

Objectives:
This study aims to examine how social media influences hookah-related perceptions and behaviors among adults in Saudi Arabia. It focuses on identifying the prevalence of hookah use, exposure to nicotine advertisements, and the frequency of using social media to search for tobacco products. The study also explores demographic patterns, common respiratory symptoms among hookah smokers, and whether online advertising or social media content encourages or normalizes hookah use. Additionally, it assesses public engagement with hookah-related posts, compares perceptions of hookah and cigarette smoking, and identifies common misconceptions surrounding hookah as a social activity.

Methods:
This cross-sectional study employed a self-administered questionnaire to collect data. The target sample size was set at 600 participants. Recruitment was achieved through a combination of convenience sampling, online outreach, and the snowball technique, ensuring a diverse and comprehensive participant base.

Result:
In a survey of 617 participants, predominantly male (70.7%) and within the 21-30 age bracket (44.1%), a majority single (67.9%), the study revealed varied educational backgrounds, with most holding either a high school diploma or a bachelor's degree. Health profiles showed 80.9% without diagnosed diseases, though asthma was reported by 13.3%. Smoking behaviors indicated 36.2% were smokers, predominantly of cigarettes, followed by e-cigarettes and hookah. Interestingly, exposure to tobacco-related information and advertising was limited; only 38% had encountered cigarette warnings and a mere 6.4% for hookah, with 69.5% not seeing any tobacco ads online. On social media, there was low engagement with tobacco content, particularly on Instagram, TikTok, and Twitter, but 77.3% never actively engaged with such posts. These findings underscore the nuanced interplay of demographics, health awareness, and digital influence in Hookah use, informing public health strategies.

Conclusion:
The study highlights the importance of tailored public health strategies that consider the unique demographic characteristics and media consumption patterns of the target population. The evident gap in awareness about the risks of Hookah use, coupled with its relatively high usage among young adults, underscores the need for more

focused health education and intervention programs. These should aim not only to address the direct health risks associated with tobacco use but also to counteract the subtle influences of digital advertising and social media on smoking behaviors.

This abstract isn't published and was presented at the 8th Health Professions Conference.

Monoclonal Antibodies Use in Severe Asthma Patients with Comorbidities: Insights from Real World Data

Fahad Alhadian, Lamia Alsulami, Abrar Alhibshi, Joud Almajnuni, Jameel Hakeem, Rouzana Khayat

Introduction:
Asthma is a variable inflammatory disease that remains a major global health challenge. Although some patients benefit from conventional therapy, severe asthmatics continue to experience persistent inflammation. Dupilumab, Mepolizumab, and Omalizumab are Monoclonal antibody (mAbs) medications that target specific inflammatory pathways and play a significant role in managing severe asthmatics. Existing literature discussing the response of severe asthmatics with comorbidities such as obesity and cardiovascular diseases (CVD), which share related inflammatory pathways with asthma, to mAbs remains limited.

Objective:
Our study aims to evaluate the effect of comorbidities, obesity and CVD, on the response to dupilumab, mepolizumab, omalizumab by assessing percentage reduction in inhaled corticosteroids (ICS) use, Asthma Control Test (ACT), FEV1% change.

Methods:
We conducted a retrospective cohort study involving severe asthmatics (age ≥ 18) who received Dupilumab, Mepolizumab, or Omalizumab between 2016 and 2025 in all NGHA hospitals at Saudi Arabia. Medical records were reviewed to collect data such as demographics, comorbidities, ICS doses, FEV1% predicted, Asthma Control Test (ACT), and inflammatory biomarkers before and after one year of treatment. Clinical outcomes were compared between severe asthmatics with/without obesity and CVD. Statistical analysis included descriptive statistics and logistic regression to evaluate the associations between comorbidities and clinical outcomes, with significance level of $p < 0.05$.

Results:
A total of 108 patients met the inclusion criteria with a mean age of 46, and the majority were female (n=73, 68%). For the distribution of mAbs, Dupilumab accounts for the largest group (n=43, 39.8%), followed by (n=40, 37% and n=25, 23%) for Mepolizumab and Omalizumab respectively. The stratification of severe asthmatics by comorbid conditions was performed and revealed that while the vast majority had no evidence of CVD (n= 76, 70%), a large subset of them were classified as "obese" or "morbidly obese" under the BMI classes (n=35, 32% and n=26, 24% respectively). In the logistic regression analysis examining the association between comorbid conditions and monoclonal antibody efficacy, obesity and CVD were significantly associated with response to Dupilumab. Obesity was strongly associated with increased odds of achieving a ≥25% reduction in inhaled corticosteroid (ICS) use following Dupilumab administration (OR 0.03, p = 0.045), as was CVD (OR 6.95, p = 0.035). In contrast, Mepolizumab and Omalizumab showed no statistically significant associations with obesity or CVD for any of the predefined outcomes.

Conclusion:
In conclusion, our findings suggest that specific comorbidities may influence the efficacy of monoclonal antibody therapy in a Saudi population. Although only ICS reduction appeared to be significant among severe asthmatics with obesity or CVD receiving Dupilumab, no significant effects were observed with Mepolizumab or Omalizumab, underscoring the importance of studying these relationships in larger patient cohorts.

Status quo and influencing factors of multidisciplinary teamwork for early mobilization in mechanically ventilated patients

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Background:
Early mobilization (EM) of mechanically ventilated (MV) patients in intensive care units (ICUs) has been a key intervention to improve functional recovery and avoid complications such as ICU-acquired weakness. Its success is highly dependent on efficient multidisciplinary teamwork (MDT). Empirical evidence in Saudi Arabia on collaboration of MDT in EM is limited. Our objective was to assess the level of collaboration among healthcare professionals involved in EM of MV patients in local ICUs, and to identify organizational and professional factors impacting collaboration.

Method:
Cross-sectional quantitative survey of healthcare professionals was distributed At four large hospitals. Participants included different specialties such as nurses, physicians, respiratory therapists, and physical therapists. Interprofessional Team Collaboration Scale II (AITCS-II) was used to assess collaboration across three themes: partnership, teamwork, and coordination. Descriptive statistics, Kruskal-Wallis H test, Chi-square test were performed.

Results:
Three hundred and forty-eight (348) participants were collected. 63.2% of participants were female. Majority of participants were nurses and participants holding a bachelor's degree. Primary staff were 78.4%, intermediate management level staff were around 17.5% while advanced level managers accounted for 4%. In general, high levels of collaboration were reported by the participants (mean AITCS-II = 3.91, SD = 0.84). The partnership area was scored the highest on average (M = 3.97, SD = 0.85), followed by teamwork (M = 3.93, SD = 0.89) and coordination (M = 3.79, SD = 0.91). Collaboration was rated as "effective" by 49% of the respondents. Significant differences in collaboration perceptions across leadership levels were observed in all three domains: partnership ($H = 12.250$, $p = 0.002$), teamwork ($H = 10.533$, $p = 0.005$), and coordination ($H = 9.496$, $p = 0.009$), with frontline staff and mid-level managers reporting higher mean ranks compared to executives.

Conclusion:
Despite interprofessional collaboration in EM of MV patients being largely positive, optimization of results requires structured leadership, clear roles, and specialty-specific protocols. Institutional dedication to training, open team structures, and resource assignment is necessary to sustain long-term improvement.

ABSTRACTS

*In order of submission date

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Keywords:
Early mobilization, mechanically ventilated patients, multidisciplinary team, ICU, interprofessional collaboration, AITCS-II, Saudi Arabia, critical care teamwork.

This study can be further expanded by increasing the number of participants.

First predictive equation of Maximal Inspiratory Pressure (MIP) for healthy adults in Saudi Arabia

Mr. Maher AlQiaimi, Abdulaziz AlHawaj, Abdullah AlMudhhi, Mohammed AlHamada, Abdulaziz AlMukhtar

Note:
The research wasn't included in any previous conferences, not published in any journals, and didn't earn any awards except for "Best research poster award" in student research day 2024, respiratory care department, IAU.

Introduction:
Maximal inspiratory pressure (MIP) is a critical indicator of respiratory muscle strength, widely utilized in the assessment of respiratory muscle weakness, various pulmonary and non-pulmonary conditions. Comparing MIP values with established reference standards is essential for detecting respiratory muscle function abnormalities. However, MIP predictive equations which are tailored to Saudi population are lacking. Therefore, this study aims to measure MIP for healthy adults for this demographic and to develop a predictive equation for MIP which is tailored to the characteristics of the Saudi population.

Methods:
A total of 217 Saudi participants (both males and females), aged 18 to 68 years, were recruited for this study. Each participant was tested using the Power Breath KH2 device to measure maximal inspiratory pressure (MIP) on a voluntary basis, following the measurement of weight, height, body mass index (BMI), lean BMI, muscle mass, and fat percentage. Additionally, hand grip strength was assessed for female participants. MIP measurements were conducted per ATS/ERS guidelines. After applying the eligibility criteria, 198 participants were included in the statistical analysis. Multilinear regression analysis and stepwise analysis were utilized to develop the optimal predictive model of MIP.

Results:
The study revealed that the MIP in the male group significantly correlated with age, weight and fat percentage. However, other independent variables like height, BMI, lean BMI, and muscle mass were not significantly correlated with the MIP. In contrast, MIP in the female group was significantly correlated with age, weight, grip strength for the dominant hand, right and left hands. Conversely, height, BMI, fat percentage, and muscle mass were not significantly correlated with the MIP.

The final equation for male group was MIP (cmH_2O) = 87.75 + (0.864×Fat percentage) – (0.594×Age) with $P<0.001$ and $R2$ of 0.135. While female equation was MIP (cmH_2O) = 6.773 + (BMI×1.119) + (GripD×0.823) – (Age×0.472) with $P<0.001$ and $R2$ of 0.174.

Conclusion:
In conclusion, this was the first study to measure the maximal inspiratory pressure (MIP) for healthy adults within the Saudi population with no reported complication. Additionally, predictive equations for MIP values specific for Saudi population was developed.

Coping Strategies Preferences Among Respiratory Therapists in Saudi Arabia: A Cross-Sectional Study

Ms. Bashayer Hussain Alyami, Ms. Njoud Saud Abuaisha, Hawraa Wadeea Alfaraj, Hawra Abdulraouf Alzuraiqi, Sara Saleh Al Mubarak, Jood Shaker Al Mubarak

Introduction:
Respiratory therapists (RTs) working in high-pressure professions are subjected to an increased risk of developing psychological obstacles. The study aimed to investigate the coping strategies utilized by RTs in Saudi Arabia, and to identify the sociodemographic and functional characteristics influence.

Method:
An observational cross-sectional study was conducted from February to April 2025. A sample of 260 RTs registered with SCFHS and working across public and private sectors in Saudi Arabia. Inclusion criteria included registered RTs with diplomas or higher, actively working in hospitals or rehabilitation centers, while other healthcare providers and students were excluded. Data were collected using an online self-administered survey distributed via social media and email. The 28-item Brief COPE Inventory (Carver, 1997) was used to assess 14 coping strategies (adaptive and maladaptive). Data were analyzed using SPSS v29.0.

Result:
The mean relative score of maladaptive strategies was 63.15 %, while the adaptive strategies were 58.19%. The most frequently used maladaptive strategies were self-blame (71.38%), behavioral disengagement (65.88%), and denial (63.0%). As for the most frequently used adaptive strategies were humor (70.63%), emotional support (58.88%), religion (58.75%), and planning (58.38%). RTs with >10 years of experience (33.43%± 7.73),12-hour shifts (31.29 ± 6.85), responsibility for >10 patients (32.05% ± 6.30), and aged >30 years (32.45% ± 6.84) had the highest mean score for dealing with maladaptive strategies ($p < 0.001$). Adaptive strategies were commonly employed by single (42.23% ± 10.90), ≤30 years old (41.12% ± 11.58), and < 5 years of experience RTs (40.60% ± 11.62) ($p < 0.001$). As well as for the northern region (49.38% ± 9.27) ($p<0.001$).

Conclusion:
The study revealed a predominant use of maladaptive coping strategies among RTs in Saudi Arabia, significantly linked to older age, being married, longer experience, extended shift hours, and high patient loads. Future research is recommended to adopt a stratified sampling design to ensure balanced regional representation across Saudi Arabia's regions.

Awareness and Perceptions of Artificial Intelligence Applications in Healthcare Among Respiratory Therapy Students and Professionals in Saudi Arabia

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Background:
Artificial intelligence (AI) is a thrilling and fast-evolving discipline in healthcare, including respiratory care, that enables diagnosis, treatment planning, and clinical management. These developments, despite the attitudes and perspectives of RT students and professionals, especially in Saudi Arabia, are yet to be adequately explored. Their attitudes are vital to inform educational initiatives and ensure effective AI integration into respiratory care services. This study attempted to assess perceptions and attitudes among Saudi Arabian students and

professionals studying/working in RT towards AI in healthcare with a focus on respiratory care and exposure to AI and compare these two groups of people.

Methodology:
We employed a quantitative descriptive cross-sectional methodology to conduct the study among practicing respiratory therapy personnel and students from Saudi Arabia. Participants were recruited through convenience sampling from personal contacts, social networks, pamphlets distributed in private and public healthcare facilities, and educational institutions. A self-reported questionnaire, piloted with four experts and pilot tested on 40 participants, measured perceptions and attitudes toward AI in respiratory care. The questionnaire included demographic questions, 11 five-point Likert-scale items measuring perceptions with Cronbach's α = 0.83, and multiple-response items of perceived usefulness, strengths, and issues.

Results:
381 RT participants (207 students and 174 professionals) completed the survey. Both groups showed awareness of the potential of AI, mainly in research, diagnosis, and treatment planning, with no statistically significant differences in perceived usefulness, benefits, or concerns ($p > 0.05$). The most common benefit of AI was its ability to accelerate healthcare processes, and the most frequent concern was that it could not handle unexpected clinical situations. Perceptions in clinical environments were largely comparable.

Conclusion and Recommendation:
The study reflects a largely positive perception of AI among Saudi Arabian RT students and professionals. Clinical limitations and lack of human interaction are still concerns. Future studies should examine determinants like educational background, clinical experience, and exposure to AI technologies to provide evidence for safe and effective AI implementation in respiratory care practice.

Acute Cardiovascular Responses to Hypoxia and Hypercapnia in Healthy Adults: The Role of the Carotid Body

Abdulaziz Bin Saleem, Abdullah Alrayes3, Saleh Alotaibi, Mohammed Alanazi, Alya Almudarra, Lames Almutairi, Mohammed Ashoor, Najla Alfadhil, Aljoharah Bin Battal

Objective:
The carotid body (CB) is a key sensor of chronic hypoxic (Hx) and hypercapnic (Hc), yet the immediate cardiovascular effects of these stimuli in healthy humans remain insufficiently characterized. While chronic responses have been widely studied, little is known about how acute Hx and combined Hx–Hc exposures influence blood pressure, pulse rate, and oxygen saturation. This study aimed to (1) characterize acute cardiovascular responses to Hx and Hx–Hc, (2) determine whether pulse rate and mean blood pressure (MBP) differ between these conditions, and (3) assess whether the magnitude of these responses depends on the duration of induction.

Methods:
Healthy participants underwent sequential assessments at: baseline, post-hypoxia (breath-hold), post-rebreathing (combined Hx–Hc), and post-recovery. MBP, pulse rate, and oxygen saturation were recorded at each stage. The baseline-subtracted change in pulse rate (ΔPR) and mean blood pressure (ΔMBP) was examined relative to individual hypoxia and hypercapnia durations. Mixed-effects models and post-hoc comparisons evaluated changes across phases, while correlation analysis assessed duration–response relationships.

Results:
Mean blood pressure (Figure 1).
MBP remained stable across all phases. Baseline values (88 ± 2.0 mmHg) were unchanged during hypoxia (88 ± 1.9 mmHg) and showed a slight rise during rebreathing (89 ± 1.7 mmHg), returning toward baseline in recovery (87 ± 1.9 mmHg). These findings indicate strong blood pressure stability during acute respiratory challenges.

Pulse rate (Figure 2).
Pulse rate showed clear phase-dependent changes. Hypoxia produced a modest increase from baseline (39 ± 1.8 to 42 ± 2.4 beats/min), whereas rebreathing elicited a more pronounced elevation (52 ± 3.8 beats/min) before declining toward baseline. Statistical analysis confirmed a significant effect of condition, with rebreathing significantly higher than baseline and hypoxia.

Oxygen saturation (Figure 3).
Saturation remained stable during hypoxia and during hypercapnia. A transient drop occurred after hypercapnia (from 97 ± 0.25% to 94 ± 0.79%), followed by rapid recovery. Post-hypercapnic desaturation was the only notable physiological disturbance observed.

Change in pulse rate relative to duration (Figure 4).
ΔPR during hypoxia was small (2.9 ± 2.7 beats/min) and unrelated to hypoxia duration ($r = 0.13$). In contrast, ΔPR during hypercapnia was substantially larger (14.6 ± 4.4 beats/min) and strongly correlated with hypercapnia duration ($r = 0.79$, $p = 0.0007$), demonstrating a clear duration-dependent tachycardic response driven by CO_2.

Change in MBP relative to duration (Figure 5).
ΔMBP remained small during both hypoxia (1.8 ± 1.4 mmHg) and hypercapnia (–0.3 ± 2.5 mmHg), with no significant correlations with duration for either condition. This indicates duration-independent blood pressure regulation under acute respiratory stress.

Conclusion:
Across all measures, pulse rate emerged as the most sensitive indicator of acute respiratory stress, particularly during combined Hx–Hc, showing a proportional increase with exposure duration. MBP remained tightly regulated and resistant to both the intensity and duration of respiratory challenges, while oxygen saturation was generally stable except for a brief post-hypercapnic decline. Overall, these findings highlight hypercapnia as the dominant autonomic driver of acute cardiovascular activation and show that pulse rate is the most responsive marker during short respiratory challenges.

Awareness of Asthma and its Management in Primary School Teachers in Al-Ahsa City, Saudi Arabia

Bandar Faqihi, Ali Alhussain, Hassan Alfaraj, Ahmed Alkhamis, Sadek Albahrani, Komail Alamer, Osama Alaknah, Mohammed Alhomili, Ahmad Almamary, Turki Alanazi

Introduction:
Asthma is one of the most common chronic respiratory conditions that affects the health, quality of life, and educational outcomes of children worldwide. In Saudi Arabia, asthma is the most common chronic respiratory disease; Al-Ahsa is reported to have the highest prevalence rates among children. This study will investigate the assessment of the level of awareness and knowledge regarding asthma management among primary school teachers in Al-Ahsa. A thorough literature search failed to locate studies that measure the teachers' awareness and knowledge about the disease in one of the Kingdom's most populous governorates, Al-Ahsa.

ABSTRACTS

*In order of submission date

Methodology:
This is a convenient cross-sectional study on 368 public and private school teachers in AlAhsa who completed a self- administered questionnaire adopting the modified Newcastle Asthma Knowledge Questionnaire. Study was conducted during the period of January 1, 2024 to December 15, 2024. To pinpoint the areas with most and least knowledge, he items of the questionnaire were divided into four categories as follows: general assessment of asthma knowledge, acute attack: recognition, triggers and management, maintenance treatment and false myths. To determine the awareness level, the answers rate was further divided into three categories: high awareness (more than 75%), partial awareness (between 50% - 75%) and poor awareness (less than 50%).

Results:
5 The response showed an average total knowledge score 17.33 (SD ± 2.87), which is 57.77% of the total score, reflecting partial understanding. There were no statistically significant associations between awareness level and sociodemographic factors, including school type, gender, and age. However, Al-Ahsa teachers outperformed peers in some regions of Saudi Arabia, but variations exist comparing them with international studies.

Conclusion:
Primary school teachers in Al-Ahsa have partial awareness level about asthma and its management. These findings point to the need for targeted education programs that would better equip teachers with the ability to respond effectively in asthma-related situations. This study calls for strategic training initiatives in empowering educators as first-order responders in asthma management and in closing the gap between health and education.

Modulating the Tumor Microenvironment of Osteosarcoma Lung Metastases with Inhaled CSF-1Ri Immunotherapy

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Osteosarcoma (OS) metastasizes mainly and almost exclusively to the lungs. The curability of the disease and the survival rate significantly decrease for patients who develop OS lung metastasis (OSLM).

Purpose:
To assess the safety profile of colony-stimulating factor-1 receptor inhibitor (CSF-1Ri) (Pexidartinib; PLX) and its efficacy in shifting the OSLM tumor microenvironment (TME) to an anti-tumorigenic state upon local delivery to lungs of a syngeneic preclinical mouse model of OSLM.

Methods:
The safety of PLX upon repeated pulmonary administration (9 doses, every other day at 2 mg/kg) in healthy BALB/c mice was assessed using health scoring, pulmonary mechanics, molecular and cellular composition of bronchoalveolar lavage fluid (BALF), blood count and plasma biochemistry, and H&E of lungs and liver. To assess the efficacy of PLX, the OSLM model was then established using murine OS cells, expressing bioluminescent and fluorescent genes (K7M2-Luc-tdT). Mice bearing OSLM were randomized into two groups (vehicle and PLX) and treated over 3 weeks. Tumor burden was evaluated using bioluminescent imaging (BLI) and lung weight. The treatment impact on the abundance and phenotype of tumor-associated macrophages (TAMs) and their CSF-1R expression as well as on the abundance of tumor-infiltrating lymphocytes and their expression to PD-1 were investigated using immunofluorescence, flow cytometry, and western blot.

Results:
PLX is well tolerated upon local lung administration with all safety markers indicating no alteration compared to naïve and vehicle controls. Treatment did not affect health scores. No functional or mechanical alteration on the lungs or systemically (including liver) were detected; no marked differences in pulmonary function parameters, proinflammatory cytokines, nor infiltrating differential cell count obtained from BALF were observed. Both total blood count and liver enzymes were within normal range. H&E sections of lungs and liver were morphologically comparable to naïve, non-treated tissue. As a measure of efficacy, treatment with PLX via local lung administration reduced tumor burden, indicated by the in vivo BLI and lung weight. Notably, PLX significantly decreased the abundance of total TAMs, with a more pronounced effect on pro-tumorigenic alternatively-activated (M2-like) TAMs phenotype, thus leading to a 22-fold increase in M1/M2 ratio. PLX further led to a marked decrease in tumor-promoting T regulatory cells (Treg), increase in the CD8/Treg ratio, and decrease in PD-1+ percentage in CD8 T cells in the TME, indicating a shift to a more immunogenic tumor phenotype.

Conclusion:
The study demonstrated that repeated doses of PLX is safe upon local delivery to the lungs of a preclinical model of OSLM, with no alternations in lungs or liver tissue. The study further showed that PLX reaches its molecular target and reduces tumor burden, which correlates with changes in the immune phenotype of the OSLM toward a more anti-tumorigenic profile. These results are clinically relevant as PLX has been approved by the FDA, thus opening opportunities for its repurposing to support standard of care therapy in OSLM.

Prevalence of Anxiety and Depression and its Associated Factors Among Patients Attending Pulmonology Clinics at King Abdulaziz Medical City (KAMC)

Dr.Munyra Alhotye, Dr.Fahad Allohidan, Remaz Alsharafa, Razan Al Kahtani, Razan Alharbi, Haifa Alsinan, Fatima Qaisi

Chronic respiratory diseases (CRDs) are irreversible conditions that impair lung and airway function, including chronic obstructive pulmonary disease (COPD), asthma, occupational lung diseases, and pulmonary hypertension. Previous studies have linked CRDs, particularly asthma and COPD, with higher rates of depression and anxiety. Despite the growing recognition of the psychological burden associated with CRDs, there is limited research in Saudi Arabia examining anxiety and depression across a range of CRDs in a single cohort.

This study aims to assess the prevalence of anxiety and depression among patients with CRDs attending pulmonology clinics at KAMC, and to examine the association between anxiety and depression and key patient characteristics and clinical factors.

This prospective, cross-sectional study collected data from pulmonology clinics at KAMC through distribution of validated, online, self-filled questionnaires given to adult patients attending the clinics.

The sample size of 345 was calculated with an expected proportion of 66%, a precision of 5%, and a confidence interval of 95%. This data was analyzed using the statistical analysis system (SAS). Descriptive statistics summarized demographic and clinical variables. Continuous

variables were represented as median ± IQR, and categorical variables were represented as frequencies and percentages. A 95% confidence level was used, with significance set at p<0.05.

A total of 182 patients participated in this study. The prevalence of depression and anxiety symptoms among the participants was 29.67% and 42.3%, respectively. There were no statistically significant associations between depression symptoms and demographic or clinical factors, as shown in the logistic regression analysis. There is a statistically significant association between mMRC dyspnea scale severity and anxiety levels among participants.

Preliminary findings from this study showed that approximately one-third of the participants experienced depression symptoms, while anxiety symptoms affected about 42.3%. Depression symptoms showed no significant association with demographic or clinical characteristics. In contrast, anxiety symptoms showed a significant relationship with dyspnea severity, as anxiety level increased in participants with higher mMRC grades. As these results are based on preliminary data, further data collection is needed to strengthen the analysis and draw a final conclusion.

Oscillometry to assess ventilation heterogeneity during hospital admission for acute cardiorespiratory illness

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This abstract is based on a study published in ERJ Open Research.

Rationale:
Hospitalisatio:n due to exacerbations of cardiorespiratory disease results in reduced lung function and increased airways obstruction. However, traditional measures of lung function require maximal effort which is difficult when patients are unwell (e.g. FEV1) and may focus on larger airways away from the major part of airways disease (e.g. peak flow). We aimed to measure whole airways function using oscillometry in patients during hospitalisation with cardiorespiratory illness compared with healthy controls.

Method:
Participants (n=310) underwent assessment; 263 were admitted to hospital with acute cardiorespiratory illness (asthma (n=80), COPD (n=75), heart failure (n=46) and pneumonia (n=62)) and 47 healthy controls were included. Participants underwent handheld oscillometry measurements within the first 24 h of admission.

Results:
Oscillometry measurement was feasible in all patients (n=310). There was a significant difference in both absolute and percentage predicted measures of lung mechanics (p<0.05 for all measures), with significantly worse lung mechanics in patients with COPD. Measures of resistance and reactance were worse in those that were more breathless (p<0.0001), had more wheeze (p<0.001) and had low oxygen saturation (p<0.001). No difference was seen based on modified early warning system score or blood biomarkers (eosinophil count, C-reactive protein and brain natriuretic peptide). There were significant improvements in oscillometry measures in those that attended following recovery from acute illness.

Conclusion:
Handheld oscillometry can be feasibly deployed in the acute care setting to obtain information on respiratory mechanics. It demonstrates significant differences in ventilation heterogeneity between patients in the acute care setting and healthy volunteers.

Acceptance of Pulmonary Telerehabilitation Among Healthcare Practitioners

Laila Almarhoon, Leenah Hassan, Talah Aljaloud, Rahaf Aljadan, Walaa Alshahrani,Gayathri Pandurangam, Swathi Gurajala

Background:
Pulmonary rehabilitation (PR) is an intervention for individuals with chronic respiratory conditions that offers exercise training and patient and behavioral education. Pulmonary tele- tele-rehabilitation (PTR) is a form of PR that provides services virtually. With this technology, patients are likely to exhibit elevated levels of satisfaction and compliance with the program. Despite efforts to promote digital technology, many institutions are still not utilizing PTR effectively. Establishing tele- tele-rehabilitation would enhance healthcare practitioners' (HCPs) satisfaction and improve patients' quality of life.

Objective:
This study aimed to assess the level of acceptance and identify factors and barriers affecting the intention to use pulmonary tele- tele-rehabilitation (PTR) among healthcare practitioners in Saudi Arabia.

Method:
A cross-sectional survey study recruited healthcare practitioners experienced in pulmonary rehabilitation in Saudi Arabia from February 2024 to April 2025 via an online platform (QuestionPro) using the pre-validated Tele Pulmonary Rehabilitation Acceptance Scale (TPRAS). The TPRAS consists of one dependent variable, which is behavioral intention (BI), and two subscales representing the independent variables: perceived usefulness (PU) and perceived ease of use (PEOU). A linear regression analysis was conducted to evaluate the impact of these variables on the intention to use PTR.

Results:
A total of 59 healthcare practitioners experienced in pulmonary rehabilitation were included in this study, with 82. 77% of them have a positive intention to use PTR. Perceived usefulness (PU) was the strongest significant predictor of HCPs' intention to use telerehabilitation. Poor internet connection and lack of patient cooperation were the most reported barriers to the use of PTR.

Conclusion:
The intention to use PTR by HCPs may be primarily influenced by perceived usefulness and perceived ease of use.

Keywords:
Pulmonary rehabilitation, Tele-rehabilitation, Health care practitioners, Technology acceptance model.

Assessment of second-hand smoke exposure on pulmonary function using IOS and DLCO and its association with health-related quality of life in healthy female college students

ABSTRACTS

*In order of submission date

Sally Yussef Abed , Khadijah M Qandeel, Fidaa Obaidan, Salam Saeed, Kawther Hassan, Zainab Alshaikh, Mashael Mamdouh Alrayes, Aya Khalid Fayyomi, Shoug Yousif Al Humoud, Hussam Mohammed Seedahmed, Swathi Gurajala, Gayathri Pandurangam

Background:
According to the World Health Organization, Second-Hand Smoking (SHS) is causing 1.2 million deaths annually. This cross-sectional study aimed to assess the SHS impact on pulmonary functions and Health-Related Quality of Life (HRQOL) among healthy, non smoking female, and to determine whether SHS may cause harmful effects.

Materials and Methods:
Using surveys, HRQOL, and Pulmonary function tests to compare SHS-exposed vs. non-exposed groups.

Results:
SHS linked to reduced FVC% and higher R5–R20, which can suggest small airway involvement; while HRQOL unaffected.

Conclusion:
Second-hand smoke exposure may impair lung function in healthy non-smoking females, particularly affecting FVC% and Z5%, with signs ofearly small airway involvement.

The effectiveness of virtual reality in enhancing adult's comprehension of body plethysmography test instructions when compared to traditional instructions

Walaa al Dawood, Jood al Saffar, Fatimah al Rajab, Norah Alobaid, Nada Sardidi, Dr.Houssam seed Ahmad, Dr.Moufida A. Al Weslati, Nada

Background:
Body plethysmography, a Pulmonary Function Test (PFT), often poses challenges for patients due to slightly difficult instructions that can lead to errors and prolonged test durations. Virtual reality (VR) can simplify these instructions, making them easier to understand and follow. While VR has been effectively utilized in areas like pulmonary rehabilitation and sleep studies, its application in body plethysmography and other PFTs remains limited. Exploring VR's potential further could significantly enhance the efficiency and accuracy of these tests.

Objective:
In the present work, we aimed to investigate the effect of using virtual reality on enhancing individuals' comprehension of body plethysmography test instructions compared to traditional instructions.

Methodology:
A randomized controlled trial was conducted at the College of Applied Medical Sciences in Jubail between February 13 and April 20, 2024. Forty female participants aged 18 to 21 with similar educational backgrounds and from eastern province were recruited. They were divided into two groups: a control group including 20 volunteers receiving instructions verbally and an intervention group of 20 participants who had the test instructions delivered using virtual reality (VR). The number of trials, the cause of test repetition, the average time to reach an acceptable maneuver, and anxiety levels were evaluated in the two groups.

Result and Discussion:
Our results showed significant differences between the two groups in terms of the number of plethysmography test trials (p=0.006). the median score in the control group was 3.5 against 1 in the intervention group. The intervention group also demonstrated a shorter test duration (p=0.02) and lower anxiety levels (p=0.045) compared to the control group. These findings suggest that the use of virtual reality in the body plethysmography test positively impacted the participants' comprehension and performance, leading to improved outcomes.

Conclusion:
this study demonstrates that using virtual reality (VR) in body plethysmography tests can enhance adults' comprehension of body plethysmography test instructions and performance. The VR group had fewer test repetitions, shorter duration, and lower anxiety levels compared to the control group.

Key words:
Pulmonary Function Tests, Body plethysmography test, Virtual reality, Medical field.

Oropharyngeal Interventions in Intubated Patients for Pre-venting Ventilator Associated Pneumonia: A Systematic Review and Multi-Variate Network Meta-Analysis Evaluating Pharmacological Agents

Kannan Sridharan, Gowri Sivaramakrishnan, Ghazi Abdulrahman Alotaibi

Background:
Ventilator-associated pneumonia (VAP) is a prevalent and serious complication of invasive mechanical ventilation (MV), contributing to significant mortality and increased healthcare resource utilization. While numerous oropharyngeal interventions exist, their comparative efficacy across critical outcomes remains uncertain due to a lack of direct comparisons in clinical trials.

Methods:
We conducted a systematic review and network meta-analysis (NMA) with a comprehensive search of MEDLINE, EMBASE, and Cochrane CENTRAL up to September 2025 for randomized and non-randomized studies comparing topical oral interventions in intubated patients. The primary outcome was VAP incidence; secondary outcomes were intensive care unit (ICU) mortality, duration of MV, and ICU length of stay (LOS). Pairwise and network meta-analyses were performed, and the certainty of evidence was assessed using GRADE. The effect estimates were odds ratios (OR) for categorical outcomes and mean difference (MD) for numerical outcomes represented with 95% confidence intervals (95% CI).

Results:
Ninety-six studies (20,650 patients) were included, evaluating 44 interventions. For VAP prevention, several interventions were superior to reference/control, including antimicrobial combinations (OR: 0.21, 95% CI: 0.05–0.39), povidone-iodine (OR: 0.47, 95% CI: 0.21–0.98), and chlorhexidine (OR 0.61, 95% CI 0.39–0.95). However, only chlorhexidine plus toothbrushing significantly reduced mortality (OR: 0.74, 95% CI: 0.58–0.93). For resource utilization, only antimicrobial combinations significantly reduced the duration of MV (MD: -5.55 days, 95% CI: -10.75 –-1.7) and ICU LOS (MD: -7.74 days, 95% CI: -13 –-4). Evidence certainty (GRADE) was moderate for chlorhexidine and very low for other comparisons.

Conclusion:
This NMA demonstrates that while multiple oropharyngeal interventions are effective for VAP prevention, their benefits are outcome specific. The choice of intervention should be guided by clinical priorities, as

the most effective strategy for preventing VAP may not concurrently reduce mortality or resource use. These findings can inform guideline development and underscore the need for standardized, multi-faceted oral care protocols in the ICU.

A Bibliometric Analysis of Global Research Trends in Forced Oscillation Technique (FOT)/ Impulse Oscillometry (IOS): Trends, Impact, and Emerging Research Areas

Lama Omar Badghish, Afnan Saleh AlRaimi .

Background:
Assessing respiratory mechanics is essential for detecting early airway abnormalities. The Forced Oscillation Technique (FOT) and Impulse Oscillometry (IOS) have gained increasing recognition as complementary, effort-independent tools that are used in both research and clinical practice. This study provides a novel, comprehensive bibliometric overview of global research trends, impact, and emerging themes in FOT/IOS research.

Methods:
A systematic search was conducted in the Web of Science Core Collection to identify publications related to FOT and IOS. Data were analyzed using VOSviewer, Excel, and Biblioshiny to examine publication trends, citation patterns, collaboration networks, keyword co-occurrence, and thematic evaluation. In addition, manual data extraction was conducted for the top 100 cited papers to describe their methodological, population, and technical characteristics.

Results:
A total of 1609 records were initially identified. After applying database filters and conducting a manual screening of titles and abstracts, 1072 studies were included in the final analysis. Analysis of publication trends revealed that research activity increased notably after 2005, reaching a peak in 2022, reflecting steady growth over time. The United States and Australia were the leading contributing countries. Frequently occurring keywords such as “Asthma”, “Forced oscillation technique”, “Impulse oscillometry”, “Lung-function”, and “Spirometry” emerged as major research directions. Furthermore, the thematic evolution over time revealed a shift from methodological and pediatric-focused themes to more clinically relevant and practical applications, highlighting the growing clinical significance of oscillometry.

Conclusion:
Global research on oscillometry has increased significantly over the past 5 decades, highlighting its development from methodological foundations to broader clinical application. The findings show the increasing recognition of FOT and IOS as complementary tools to conventional pulmonary function tests for small airway assessment. Future research hotspots are expected to focus on AI applications, diagnosis and monitoring of respiratory diseases, and multidisciplinary uses such as rehabilitation and home care.

Disclaimer:
All work, data analysis, and writing were conducted independently by the author. Artificial intelligence tools were used solely for proofreading purposes and not for generating any of the content.

Evaluation of Practices, Knowledge, and Barriers of the Use of Lung Recruitment Maneuvers among ICU Staff in the Eastern Region, KSA

Al Zahra Alassiri, Noor Alahmar,Doha Alabbad, Rabab Al Ghazwi,Fatimah al mousa, Sarrah al Ajmi,Dr.Doaa Radwan, Dr.Moufida Al Weslati

Background:
Lung Recruitment Maneuvers (LRM) are ventilatory strategies used to improve oxygenation and lung compliance. They reduce ventilator-induced lung injury in patients with Acute Respiratory Distress Syndrome (ARDS). LRM are used in various respiratory conditions, including ARDS, Acute Lung Injury, Coronavirus Disease 2019 (COVID-19), and severe hypoxemia. However, there is a gap in knowledge, practice patterns, and barriers among Intensive Care Unit (ICU) staff in the Eastern Region of Saudi Arabia. This study aimed to assess the level of knowledge and identify knowledge gaps related to LRM among ICU healthcare providers, examine variations in clinical practice, determine barriers to LRM application, and generate recommendations to optimize LRM use across different protocols and technologies.

Methods:
This cross-sectional study employed a peer-reviewed questionnaire (Cronbach’s alpha = 0.7) administered to 121 ICU professionals (intensivists, nurses, and respiratory therapists) to assess knowledge, practices, and barriers regarding LRM.Demographic data, LRM knowledge, practice modalities, and barriers were covered in the questionnaire. A benchmark scoring system was implemented, assigning 5 points to evidence-based answers and 1 point to other correct responses across all sections. descriptive and inferential statistics were employed to examine differences between speciality groups with significance set at P≤0.05

Results:
121 participants were included. With a mean work experience of 8.76years. Knowledge assessment showed comparable understanding of optimal LRM indications among groups (P = 0.297), while other knowledge items : LRM contraindications and factors influencing the selection of specific manoeuvre demonstrated significant differences (P = 0.018, P = 0.012, and P = 0.055). Practice patterns revealed significant interprofessional variation in several domains. Despite uniform reporting of knowledge-related barriers to lung recruitment maneuvers across all professional groups and institutions, intensivists demonstrated greater recognition of the potential for patient deterioration from improper LRM execution, while respiratory therapists and nurses differed in their perceptions of the consequences, highlighting a critical disconnect between risk awareness and clinical practice that may impact patient outcomes.

Conclusion:
This study revealed key gaps in LRM knowledge and practice across study domains, especially in recognizing contraindications. Standardized training and further research are essential to improve patient safety and effective LRM performance.

Keywords:
LRM, ARDS, PEEP, RT, Nurse, Intensivist ICU

The Long-Term Dyspnea and Cough in Young Adults Four Years After COVID-19 recovery in Saudi Arabia

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Objective:
To assess the prevalence and severity of self-reported dyspnea and chronic cough in previously healthy young adults four years after recovering from COVID-19.

Methods:
A cross-sectional study was conducted among 339 Saudi adults aged 20–39 years with confirmed COVID-19 infection in 2020–2021 and full recovery. Covid-19 severity was classified based on self-reported symptoms and absence of hospitalization or oxygen therapy. Participants completed an online survey including demographic data, the validated Arabic Dyspnea-12 (D-12) questionnaire, and the Simplified Cough Score (SCS). Individuals with chronic diseases, smoking history, obesity, or prior hospitalization were excluded.

Results:
Most participants reported minimal respiratory symptoms. Morning cough was absent in 79.4% and nighttime cough in 85%. Only 1–1.5% reported frequent cough affecting daily life. Median D-12 scores indicated low dyspnea severity: total score = 1 (IQR: 0–4), physical = 1 (0–3), and affective = 0 (0–0). Findings demonstrate minimal long-term cough or dyspnea four years post-infection.

Conclusion:
Previously healthy young adults recovering from COVID-19 demonstrate a very low prevalence of dyspnea or chronic cough four years post infection. These results provide reassurance that routine long-term respiratory follow-up is not necessary in low-risk populations. Future research should include objective clinical assessments and gender-balanced samples.

Multidisciplinary Teamwork for Early Mobilization in Mechanically Ventilated ICU Patients.

Wala Almutiri, Shatha Darraj, Rola Sharahili, Raneem Alkathiri, Raghad Alawbal, Haya Altamimi, Renad Alablan, Rawan Alanazi

Background:
Successful early mobilization (EM) of mechanically ventilated (MV) patients in intensive care units (ICUs) is highly dependent on efficient multidisciplinary teamwork (MDT). Our objective was to assess the level of collaboration among healthcare professionals involved in EM of MV patients, and to identify organizational and professional factors impacting collaboration.

Method:
A cross-sectional quantitative survey was conducted among healthcare professionals across four large local hospitals. Participants included different ICU specialists. Interprofessional Team Collaboration Scale II (AITCS-II) was used to assess collaboration. Descriptive statistics, Kruskal-Wallis H test, Chi-square tests were performed.

Results:
Three hundred and eighty-two (382) participants were included. Majority of participants were nurses (56%) and participants holding a bachelor’s degree (76.4%). Primary staff were (65.7%), intermediate management level staff (18.1%), and advanced level managers (16.2%). No significant difference was reported across the leadership levels in the three main collaboration domains. Results indicate that only 33.3% of PTs reported having access to a formal MDT for managing MV ICU patients, which differed significantly compared to other professions ($p < 0.001$), and their role clarity differed significantly across professions ($p = 0.019$). Moreover, only 36.1% of participants have formal training on collaborative approach for managing MV ICU patients.

Conclusion:
Despite interprofessional collaboration in EM of MV patients being largely positive, optimization of results requires structured leadership, clear roles, and specialty-specific protocols. Institutional dedication to training, open team structures, and resource assignment is necessary to sustain long-term improvement.

Keywords:
Early mobilization, mechanically ventilated patients, multidisciplinary team, ICU, interprofessional collaboration, AITCS-II, Saudi Arabia, critical care teamwork.

The prevalence and factors of stroke in patients diagnosed with obstructive sleep apnea, multi-center study

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Background:
Obstructive sleep apnea affects stroke prevalence significantly, with 5–12% of elderly OSA patients experiencing ischemic stroke over 3–4 years, modulated by hypoxemia severity, obesity, and cardiovascular comorbidities.

Aims:
To determine the prevalence of stroke among patients with OSA, quantify the association between OSA severity and stroke occurrence, and identify clinical and polysomnographic factors that mediate this relationship.

Method:
This retrospective cohort study examined stroke prevalence and its association with obstructive sleep apnea (OSA) severity using National Guard Health Affairs electronic medical records. We analyzed patients diagnosed with OSA and stroke to identify demographic and clinical factors modifying stroke risk.

Result:
Among 20,515 patients diagnosed with stroke and 2,954 patients diagnosed with obstructive sleep apnea (OSA), 265 patients (1.29%) presented with both conditions. The prevalence of OSA among stroke patients was 1.29% (265/20,515), while 8.97% (265/2,954) of OSA patients had experienced stroke, representing a comorbidity ratio of approximately 1:77 for OSA in stroke patients and 1:11 for stroke in OSA patients. Clinical characterization revealed that OSA was associated with high body mass index (BMI) >35, increased bicarbonate (HCO_3) levels in arterial blood gas analysis (35± 6.2 mg/L), and elevated C-Reactive Protein (CRP) levels (25 ± 12.5 mg/L), indicating metabolic and inflammatory components in OSA pathophysiology.

Conclusion:
This study show a significant OSA-stroke association (8.97% stroke prevalence in OSA vs. 1.29% OSA prevalence in stroke) mediated by obesity, chronic hypercapnia, and systemic inflammation, providing evidence for multi-factorial pathophysiological mechanisms and identifying potential therapeutic targets for stroke prevention in OSA populations.

The Impact of Screen Time on Sleep Quality Among College of Applied Medical Sciences in Jubail Students

Ghadeer Aljanabi, Zainab Alshiyokh, Zahra AlShehab, Aqilah Almusbah, Fatimah Alosaif

Introduction:
Excessive screen time, especially before bedtime, is linked to disrupted sleep patterns, reduced sleep duration, and poor sleep quality among young adults. This is mainly due to blue light emitted by devices like smartphones and tablets, which suppresses melatonin and delays sleep onset. Sleep quality is influenced by factors such as sleep latency, nighttime awakenings, and sleep efficiency. Prolonged screen use before sleep can disrupt circadian rhythms and impair both physical and cognitive recovery. This study aimed to evaluate the correlation between screen time and sleep quality among CAMSJ students and to assess their average screen time usage during the day and in the two hours preceding sleep. We hypothesized that increased screen time, especially during the two hours before bedtime leading up to sleep, would correlate with diminished sleep quality.

Methodology:
Research design: This study employs a descriptive cross sectional design with a mixed-method, combining quantitative and qualitative data to assess the impact of screen time on sleep quality.

Sample size:
A 207 students was determined using a raosoftcalculator.
Inclusion criteria: Female students who enrolled at CAMSJ.
Exclusion criteria: Students with diagnosed sleep disorder, who taking medication affecting on sleep.

Targeted population: Female students who enrolled on Preparatory Year, Respiratory Care, Anaesthesia Technology, Neuroscience Technology at CAMSJ.

Data collection: Data were collected using online questionnaires administered via Microsoft forms, with validated questions adapted from the PSQI. Additionally, semi-structured interviews were conducted with 22 female students were selected through an open invitation, followed by a short screening questionnaire.

Results:
The quantitative analysis showed no significant association between screen time and poor sleep quality. The quantitative findings indicated no statistically significant association between daily screen time and PSQI scores (r = -0.079, p = 0.259). Many participants described experiencing disrupted sleep due to screen use, particularly before bedtime. However, the qualitative responses painted a contrasting picture. Suggesting that although total scores remained low, many participants experienced difficulty falling asleep and reported frequent nighttime disruptions.

Conclusion
The study showed that 95.2% of CAMSJ students used screens before bedtime, mainly for social and entertainment purposes, with many perceiving a negative impact on sleep. Despite this, sleep quality did not vary significantly by academic year. Some students adopted mitigation strategies like dark mode and reduced brightness. However, the study's cross-sectional design and limited sample reduce its generalizability and prevent causal conclusions. Future research should use longitudinal methods and objective tools to assess the impact of screen use and evaluate interventions. Expanding samples and promoting sleep hygiene are also recommended.

Effectiveness of High-Flow Nasal Cannula in Sickle Cell Disease Patients With Acute Chest Syndrome: A pilot Retrospective Cohort Study

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Background:
Acute chest syndrome (ACS) is a predominant cause of intensive care unit (ICU) admissions and respiratory failure among patients with sickle cell disease (SCD). High-flow nasal cannula (HFNC) is increasingly employed to enhance oxygenation and reduce respiratory effort; however, data regarding early physiologic responses and outcomes in ACS remain scarce.

Aim:
To describe early changes in respiratory distress and oxygenation subsequent to HFNC initiation in SCD patients with ACS and to document significant clinical outcomes.

Methods:
A retrospective pilot cohort study involving 25 patients (≥15 years) with SCD and ACS treated with HFNC between 2020 and 2024 was conducted. Indicators of respiratory distress were evaluated upon admission and at 1, 6, and 12 hours following the initiation of HFNC therapy. Oxygenation was evaluated using the ROX index (ratio of oxygen saturation to inspired oxygen fraction divided by respiratory rate) and P/F ratio (arterial oxygen partial pressure to inspired oxygen fraction) when applicable. Paired comparisons utilized Wilcoxon signed-rank tests, while exploratory comparisons between HFNC success and failure used Mann–Whitney U tests.

Results:
The proportion of patients with documented respiratory distress decreased progressively from 72% at admission to 44% at 1 hour, 24% at 6 hours, and 12% at 12 hours post-HFNC initiation. The median ROX index exhibited an upward trend over study period, increasing from a median of 0.0768 at the one-hour mark to 0.0987 at six hours (p = 0.31), although statistical significance was limited by incomplete paired data. Intubation within 28 days was necessary for 52% of the patients, and 60% required an escalation of either non-invasive or invasive ventilation. The median length of hospital stay was consistent at five days for all patients.

Conclusion:
Within this pilot cohort of ACS patients receiving HFNC, respiratory distress significantly diminished within the initial 12 hours, alongside positive trends in oxygenation. Despite elevated rates of escalation, these findings indicate an early clinical advantage of HFNC and thereby justify the need for larger, prospective studies to identify predictors of response and failure.

ABSTRACTS

*In order of submission date

THE BEST OF aarc 2026 DAMMAM, KSA 15-17 JANUARY 2026

The association between patient-reported outcomes and pulmonary exacerbations in Alpha-1 antitrypsin deficiency patients

JA Almahmoudi, A Pye, AM Turner

Introduction:
the negative effect that pulmonary exacerbations have on alpha-1 antitrypsin Deficiency (AATD) patients' lung function has been explored and proven. Nonetheless, studies addressing the association between patient-reported outcomes (PROs) and exacerbation frequency in patients with AATD are lacking. This area is important to study because it aligns patient experience with clinical outcomes, offers early intervention potential, and helps bridge the gap between subjective symptoms and objective exacerbation events in a rare, but serious, chronic condition.

Study Aim:
To examine the association between exacerbation frequency and patient-reported outcomes in individuals with alpha-1 antitrypsin deficiency and assess the strength of these associations in relation to lung function (FEV1%).

Method:
Data for patients with PiZZ AATD was extracted from a cohort/ registry held at Queen Elizabeth Hospital Birmingham. Patients were categorized, based on their self-reported exacerbation frequency over the previous 12 months, into frequent exacerbators FE (≥2), infrequent exacerbators IE (<2), and non-exacerbators (0). PROs were measured using the St. George's Respiratory Questionnaire (SGRQ), the COPD Assessment Test (CAT), and the Modified Medical Research Council (mMRC) Dyspnea Scale. Associations were analyzed using non-parametric tests, Spearman correlation, and multivariable linear regression to control for confounders such as smoking history, COPD diagnosis, and FEV1%.

Results:
A total of 234 PiZZ patients were included in this study. The FE group (n=69) reported significantly poorer PROs when compared to the IE group (n=165), even though FEV1% was not significantly different between the two groups (p = 0.055).When comparing exacerbators (both FE and IE) to non-exacerbators, all PROs and FEV1% were significantly different with poorer results seen in the exacerbators group ($p < 0.001$ for SGRC and CAT and $p = 0.007$ for mMRC). Spearman rank correlation supported that lower FEV1% and more exacerbations are significantly correlated with poorer PROs ($p \leq 0.001$ in all correlations). Multiple regression analysis confirmed that both exacerbation frequency and FEV1% independently predicted PRO scores, with FEV1% showing stronger correlations with activity and dyspnea severity.

Conclusion:
Exacerbation frequency and impaired lung function are associated with poorer PROs in individuals with AATD. These findings support the clinical relevance of integrating PROs into routine assessment for AATD patients, especially those at risk of frequent exacerbations. Routine PRO monitoring may facilitate early intervention, improve patient-centered care and quality-of-life outcomes.

Non-Invasive Ventilation in Sickle Cell Disease and Acute Chest Syndrome: A Systematic Review and Meta-Analysis

Fatimah Alkuaibi, Makarem Alkhalaf, Saja Abuzaid, Najla Omar
Supervised by: Ghadeer Alowaywi, Ali Albahrani

Introduction:
Sickle Cell Disease (SCD) is a hereditary blood disorder marked by abnormal hemoglobin (HbS), leading to red blood cell sickling, vaso-occlusion, and chronic complications. One of the most severe and life-threatening complications is Acute Chest Syndrome (ACS), a pulmonary condition characterized by fever, chest pain, cough, hypoxia, and pulmonary infiltrates.

ACS is a leading cause of ICU admissions in this population and is frequently triggered by infection, fat embolism, or pulmonary infarction. Key risk factors include fever, low hemoglobin levels, elevated white blood cell count, and baseline lung disease.
Management typically involves oxygen therapy, antibiotics, analgesia, and blood transfusion. Non-Invasive Ventilation (NIV), such as CPAP or BiPAP, has gained attention as a promising intervention to improve oxygenation and reduce the need for intubation.

Aim:
This research aims to answer the question:
In patients with Sickle Cell Disease and Acute Chest Syndrome (ACS), what is the impact of Non-Invasive Ventilation (NIV) compared to standard treatment (oxygen therapy, invasive ventilation, or no NIV) on oxygenation, respiratory function, and the likelihood of intubation?

Methods:
This PRISMA-compliant systematic review and meta-analysis included studies published between 2000 and 2024.
Databases searched: PubMed, Scopus, and Cochrane.
Included studies:
English-language studies

Patients with SCD and ACS

Comparisons between NIV and standard oxygen therapy

Reported clinical outcomes

Study Selection and Quality Assessment

Quality was assessed using Cochrane Risk of Bias (ROBINS-I) and Newcastle-Ottawa Scale.

Statistical analysis was performed using Review Manager (RevMan) version 5.4 with random-effects models and subgroup analysis by age.

Results:
Primary Outcomes
1. Intubation Rates
NIV significantly reduced the risk of intubation compared to standard oxygen therapy
Risk Ratio (RR): 0.25 (95% CI: 0.08–0.77, p = 0.01)

2. Mortality Rates
No statistically significant difference in mortality between NIV and non-NIV groups
RR: 0.93 (95% CI: 0.45–1.92, p = 0.87)

3. Length of Hospital Stay
NIV use was associated with a shorter hospital stay
Mean Difference: −2.4 days (95% CI: −3.8 to −1.0)
Secondary Outcomes
Pediatric vs Adult Subgroup Analysis
NIV had a stronger effect in reducing intubation among pediatric patients.
Interaction between age group and treatment effect was statistically significant p = 0.03

Study Design Influence
No significant difference observed when comparing randomized controlled trials with observational studies.

Discussion:
NIV effectively maintains open airways, reduces inflammation, and prevents lung collapse, thereby improving oxygenation. Early application of NIV in ACS patients may prevent disease progression and avoid invasive mechanical ventilation. Findings are consistent across pediatric and adult populations, with stronger evidence in children. Limitations include small sample sizes, heterogeneity among studies, differences in NIV protocols, and limited long-term outcome data.

Conclusion:
The findings strongly support NIV as a safe and effective intervention that significantly reduces intubation rates, ICU admissions, hospital stay, and mortality risk when applied early in patients with SCD and Acute Chest Syndrome.

Recommendations:
Prioritize high-flow nasal cannula (HFNC) or NIV (CPAP/BiPAP) as first-line respiratory support in ACS.
Standardize NIV protocols and ensure early intervention.
Encourage further multicenter randomized controlled trials to strengthen evidence and optimize patient outcomes.

Physical Activity with Cardiorespiratory Individuals {Exploratory study}

Dr. Mobarak Alqahtani. Othman Alzahrani. Abdulmalik Alotaibi

Background:
Considering that cardiovascular diseases are the world's largest cause of mortality, cardiorespiratory diseases represent a serious global health concern. Morbidity and mortality are significantly impacted by conditions such as myocardial infarction (MI) and chronic respiratory disorders including asthma and COPD. Modifiable risk factors like smoking, eating poorly, and being sedentary are frequently shared by these illnesses.

Changes in lifestyle, especially more physical activity, are important for management and prevention and have major advantages for respiratory and cardiovascular health. On the other hand, sedentary lifestyles make diseases worse, which emphasizes how crucial it is to address these risk factors in order to enhance results and lessen the burden on a worldwide scale.

Materials And Methods:
The National Guard Hospital in Riyadh, and Riyadh citizen's in Saudi Arabia, is the site of this cross-sectional questionnaire-based study. The International Physical Activity Questionnaire (IPAQ) was used to gauge physical activity. Physical activity levels and sociodemographic traits were examples of covariates. The adjusted and unadjusted odds ratios (ORs) were obtained through the use of modeled Poisson generalized linear model.

Results:
The model for hospital admission data was fitted using a Poisson generalized linear model with a log link, with quasi-Poisson dispersion correction for overdispersion. The predictor category (Low, Moderate, High) significantly influenced hospital admission data (likelihood ratio $\chi^2 = 21.93$, df = 2, $p < 0.0001$). Relative to the Moderate category, there was a significantly higher admission rate in the Low category (IRR = 1.54, 95% CI 1.26-1.91) and a significantly lower admission rate in the High category (IRR = 0.55, 95% CI 0.39-0.74). These results clearly suggest a significant relationship between category levels of physical activity and hospital admissions due to acute exacerbation of cardiorespiratory system.

Conclusions:
The significance of exercise in fostering cardiorespiratory health and averting chronic illnesses is reaffirmed by this study. The results provide a basis for focused public health initiatives to promote active lifestyles, lessen health inequalities, and enhance outcomes for people with cardiorespiratory risks, notwithstanding the difficulties associated with physical inactivity. The advancement of public health initiatives in Saudi Arabia and elsewhere will depend on addressing socioeconomic constraints and raising knowledge of lifestyle factors that may be changed.

Incentive Spirometry Adherence: A Survey of Healthcare Providers' Perspectives in a Single Centre in the Eastern Region of Saudi Arabia

Bandar Faqihi, Bayan Almusaylim, Rhmh Almoaebd, Hend Alharbi, Hadeel Alghanim, Jana Althafar, Maryam Al Moagel, Fahad Alenazi

Background:
Incentive spirometry is therapeutic device that required the patient to achieve a target inspiratory volume. It is commonly used post-operatively to help prevent atelectasis, reopening collapsed alveoli, and improving oxygenation

Aim:
This study aims to assess health care providers' perspectives regarding patient's adherence to incentive spirometry (IS), and to identify the barriers that contribute to non-adherence

Method:
A cross-sectional study was conducted from September to December 2024 with a sample of 173 consisting of respiratory therapists and nursing staff working at King Abdulaziz National Guard hospital in Al-Ahsa City. All the participants completed an online distributed survey including respondents' characteristics and IS-related questions. Univariate and Bivariateanalyses were performed using JMP version 18.1.1

Results:
The majority of both respiratory therapists and nurses agreed that adherence to IS is poor (55% and 70.7%, respectively), with a total agreement of 68.8%. Additionally, most respiratory therapists and nurses believed that patients' adherence to IS should be improved (100% and 96.1%, respectively), resulting in a total agreement of 96.5%. The common barriers to patient compliance with IS included forgetting to use it (49.1%), not understanding how to use it properly (44.5%), and experiencing excessive pain (43.9%).

Conclusion:
This study highlights the challenges of poor adherence to incentive spirometry, often linked to barriers such as forgetfulness, pain, and confusion about its use. Gender and education were identified as factors influencing healthcare providers' perspectives, while years of experience were not significant. To improve adherence and reduce postoperative complications, there is a need for enhanced patient education, clearer protocols, and better support for healthcare providers.

ABSTRACTS

*In order of submission date

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Integrating Virtual Reality into Asthma Education: Effects on Patient Knowledge and skill of Proper pMDI techniques at IAU

Renad Alyami, Areej Almazroa, noor abubashait ,Azza Al-Nabulsi, Ameenah Alkhaldi, Khawlah Alshayie, Roaa Arishi

Introduction:
Asthma is a prevalent chronic condition requiring proper inhaler technique for effective management. Pressurized metered-dose inhalers (pMDIs) are commonly prescribed, yet many patients use them incorrectly, reducing treatment efficacy. Traditional educational methods have limitations in engagement and retention. This study aims to assess the effectiveness of integrating Virtual Reality (VR) as an educational tool to enhance knowledge and skill in using pMDIs among students at Imam Abdulrahman Bin Faisal University (IAU), comparing it to traditional teaching methods.

Methodology:
This randomized controlled trial will involve non-medical IAU college students, divided into two groups: one receiving traditional education and the other VR-based training on pMDI use. A pre-test will assess baseline knowledge and skills, followed by the intervention (either VR or traditional teaching). Post-intervention, participants will be reassessed using a standardized MDI checklist and knowledge questionnaire. The VR group will interact with a simulated, immersive application designed to demonstrate and allow practice of correct pMDI techniques.

Outcome:
We expect the VR-based intervention to result in significantly higher improvement in both knowledge and practical skills compared to the traditional group. This could lead to better asthma self-management and fewer technique-related complications. The study may support adopting innovative tools like VR in patient and public health education.

Conclusion:
By integrating VR into asthma education, this study seeks to improve the understanding and application of correct pMDI techniques. If successful, it could mark a shift in educational strategies toward more immersive, interactive learning, ultimately enhancing patient outcomes. This approach aligns with Saudi Vision 2030 by promoting innovation, digital transformation, and improved healthcare education for a more informed and healthier society.

Prevalence of Obstructive Sleep Apnea (OSA) and Other Chronic Respiratory Diseases in Individuals with Musculoskeletal Diseases in Saudi Arabia

Dr.Mobarak Alqahtani , Haifa Alsinan , Fatima Qaisi

Introduction:
Chronic Respiratory Diseases (CRDs) are long-term conditions that affect the airways and other structures of the lungs. CRDs are global causes of disability and morbidity. Obstructive Sleep Apnea (OSA) is characterized by recurrent upper airway obstruction during sleep, and it has been shown to affect almost every body system. Musculoskeletal disorders (MSDs) are defined as impairments of the joints, bones, muscles, and connective tissues, resulting in temporary or permanent restrictions in an individual's lifestyle. Previous studies have linked OSA and CRDs with specific MSDs. According to our knowledge, there is limited research that have examined CRDs, especially OSA, across multiple MSDs.

Aim and Objectives:
The aim of this study is to investigate the prevalence and risk of developing a chronic respiratory disease, especially Obstructive Sleep Apnea (OSA), in adults living in Saudi Arabia who suffer from MSDs. The objectives are: (1) to identify the association between CRDs with MSDs in adults living in Saudi Arabia; and (2) to examine sex-based differences in the prevalence of MSDs and CRDs, including OSA, among adults living in Saudi Arabia.

Materials and Methods:
This retrospective, cross-sectional study extracted data from electronic medical records of National Guard Hospitals across multiple regions of Saudi Arabia, allowing for a wider geographic representation in the study population.

Based on calculations using a confidence interval of 95%, a standard deviation of 0.5, and a margin of error of 5%, the required sample size was estimated to be 377 participants. This study used a non-random convenient sampling technique.

The data was analyzed using the Statistical Package for the Social Sciences (SPSS). Data for continuous variables was presented as the median and interquartile range. Data for categorical variables was presented as frequencies and percentages. A confidence level of 95% was used, and statistical significance was set at $P<0.05$.

Results:
This study included 107 participants who were diagnosed with both MSD and CRD. The median age was 67 ± 11.5 years, and 82.2% of the participants were female. The majority of participants were obese (66.4%), followed by overweight category (28%). The prevalence of Osteoarthritis observed in this study indicated that it was the most prevalent MSD (94.4%), followed by fibromyalgia (11.2%) and rheumatoid arthritis (5.6%). The majority of participants (79.4%) experienced pain related to MSDs. The prevalence of OSA was 4.7%, and asthma was the most prevalent CRD (92.6%). Cardiovascular Diseases (CVDs) was significantly (P-value< 0.024) more prevalent among males compared with females. No statistically significant association was found between MSDs and CRDs, including OSA ($p > 0.05$). Although sex-based differences were observed in the prevalence of MSDs and CRDs, these differences did not reach statistical significance.

Discussion:
The prevalence of osteoarthritis and asthma were the most frequently observed MSD and CRD in this study, particularly among older adults. The predominance of female participants aligns with previous studies. In contrast, the prevalence of OSA in this study was relatively low in comparison to previous studies. This could be explained by underdiagnosis of OSA and the preliminary results. In addition, the majority of the participants were from the Central region, while the rest were from the Northern region of Saudi Arabia, which may limit the generalizability of these findings.

Conclusion:
In conclusion, this study found that osteoarthritis and asthma were the most prevalent conditions; nevertheless, no statistically significant association identified between MSDs and CRDs. However, this is preliminary data, further data collection and analysis is needed to finalize the results.

Influence of Time of Day on Spirometry Results in Healthy Adults

Raid M. Alzhranei, Jameel Hakeem , Shoog A. Jaafary, Meaad M. Al Zubaidi, Wafaa W. Noaman

Background:
Spirometry, which measures the amount of inspired and expired air from the lungs, is the most common physiological and diagnostic standard in pulmonary function tests (PFTs). Various standard parameters can be measured using spirometry. Numerous human organs, including the lung, undergo various physiological changes in function within a day due to a process called circadian rhythms. Therefore, is crucial to be aware of time-dependent changes in lung function to acquire the optimal outcomes in PFT. Previous studies focused on specific parameters such as forced expiratory volume at one second (FEV1), peak expiratory flow (PEF), and forced expiratory flow between 25 and 75% (FEF 25-75), but rarely discussed and examined the vital capacity (VC). Therefore, this study aims to assess the impact of diurnal variation on spirometry mainly focusing on vital capacity in healthy adults.

Methods:
36 healthy adults (13 males) were enrolled. PFT was measured at three time points in a day, around 9:00 AM, 12:00 Noon, and 3:00 PM in the respiratory therapy laboratory. Diurnal variability in forced vital capacity (FVC), FEV1, FVC/ FEV1 ratio, PEF, and FEF 25-75 were determined and compared. The repeated measures ANOVA test was done assuming that the data is normally distributed, and the variances of the differences between all possible pairs of time points are equal.

Results:
The results showed minimal diurnal variation across all measured spirometric parameters. A statistically significant difference was observed only in FEV_1 (% predicted) between the morning and evening measurements ($p < 0.05$), with higher values recorded in the morning. All other parameters, including FVC, FEV_1/FVC, FEF25–75, and PEF, showed no significant differences among the three time points.

Conclusion:
This study evaluated the effect of diurnal variation on pulmonary function in healthy adults. Overall, spirometric values remained stable throughout the day, with no clinically significant changes, although FEV_1 tended to be slightly higher in the morning. Given that FEV_1 is a key parameter for diagnosis and monitoring, time-of-day variability may affect disease classification, severity assessment, and treatment evaluation in obstructive conditions. Further studies with larger samples and patients with obstructive airway diseases are needed to clarify the clinical relevance of circadian-related changes and to support standardizing the timing of pulmonary function testing.

Evaluation of agricultural occupational effect on pulmonary disease symptoms among farmers in Eastern province in Saudi Arabia

Azza Al Nabulsi, Fatimah Hamadi, Layla Al Salman, Zainab Al Herz, Kawthar Al Jafar

Background:
Agricultural workers are at high risk of respiratory diseases and lung functional impairment worldwide since they are continuously exposed to different animal and plant products. Therefore, this study aimed to evaluate respiratory symptoms in an agricultural environment and measure lung function alterations. It is hypothesized that there is an association between exposure to agriculture environment and increase respiratory symptoms (coughing, phlegm, shortness of breath). In addition, there is a decline in pulmonary function among farmers.

Methods:
A cross-sectional study of 44 farmers in the eastern province of Saudi Arabia was conducted between August 2023 and May 2024. To evaluate respiratory symptoms among farmers, a validated face-to-face questionnaire survey adopted from the American Thoracic Society Division of Lung Diseases questionnaire (ATS-DLD-78A) was used. In addition, a pulmonary function test was conducted using a portable spirometer.

Results:
There was a significant decrease in both forced expiratory volume in 1 second (FEV1%) predicted and forced vital capacity (FVC%) predicted in the group of farmers with lung disease compared with normal lung farmers (p=0.001). Furthermore, the prevalence of chronic respiratory symptoms was higher in farmers with reduced FEV1% and FVC% predicted but it was not statistically significant.

Conclusion:
The study discovered that pulmonary function test parameters were significantly lower in comparison to predicted values among farmers. In addition, there was an increased likelihood of having pulmonary symptoms (cough, phlegm, wheezing) in farmers with lower PFT values, but this was not statistically significant. Additionally, there was no association found between pulmonary function disorders and working hours, dust exposure, or chemical fumigation exposure. The end result is that, in Eastern province of Saudi Arabia, respiratory problems are not related to exposure to an agricultural occupational environment.

Interstitial Lung Disease Awareness, Knowledge Gaps, and Care-Seeking Barriers in Saudi Arabia: A National Cross-Sectional Study

Malik A Althobiani, Husam Alahmadi, Mazen Homoud, Hajed Al-Otaibi, Fatma Almahlouthturky Zafir, Ali Alshamrani, Ziad A Alalwi, Abdullah Alqarni

Objective:
Interstitial lung diseases (ILDs) are a heterogeneous group of diffuse parenchymal lung disorders, including idiopathic interstitial pneumonias, connective-tissue-disease–associated ILD and sarcoidosis. Patients often experience prolonged diagnostic delays and non-specific symptom profiles that overlap with more prevalent conditions. While these delays are well documented, the contribution of low public awareness to these delays is not well described in the Middle East. We aimed to determine the prevalence of ILD awareness in Saudi Arabia and evaluate its independent association with knowledge, attitudes, and care-seeking practices.

Methods:
We conducted a cross-sectional study of adults (≥18 years) across Saudi Arabia between May and October 2025. The study was reported in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology guideline (STROBE). Data were collected using a validated knowledge, attitudes, and practices questionnaire, developed with reference to World Health Organization guidance and the Theory of Planned Behaviour. Factors associated with prior ILD awareness were assessed using multivariable logistic regression. KAP domain scores, Knowledge (0–8), Attitude (1–5), and Practice (1–5) were compared between awareness groups using Mann–Whitney U tests and analysed using multivariable linear regression with standard errors, adjusting for demographics and healthcare background. P values were adjusted for multiple comparisons using the Benjamini Hochberg false discovery rate procedure. Ethical approval was obtained from King Abdulaziz University.

Findings:
Of 830 individuals who initiated the survey, 628 (75.7%) provided complete responses and were included in the analysis. Of 628 participants, 116 (18.5%) reported prior ILD awareness. Healthcare providers had 6.45-fold higher odds of awareness (95% CI 3.12–13.32; p<0.001), and other demographic factors showed no independent association. The awareness pathway, including information sources and personal connection, is shown in Figure 1. After adjustment, prior awareness was associated with higher knowledge (β=3.27, 95% CI 2.77–3.77; p<0.001) and higher practice scores (p<0.001). Attitude differences were small and were not statistically significant after full adjustment (p=0.051). Unadjusted distributions of knowledge, attitude, and practice scores are shown in Figure 2. Lack of awareness was reported as a care-seeking barrier by 81% (413/512) of unaware and even by 78% (90/116) of aware participants. Unaware participants prioritised symptom information (65% vs 53%), whereas aware participants prioritised specialist centre access (53% vs 43%).

Conclusion:
ILD awareness in Saudi Arabia is low (18.5%), concentrated among healthcare providers, with knowledge gaps across both the public and healthcare professionals. The persistence of perceived knowledge deficits, even among those aware demonstrates unmet educational needs. Findings support targeted public campaigns emphasising symptom recognition and primary care education to support earlier recognition, diagnosis, and timely specialist referral.

The Use of Short Acting Bronchodilator as a Standalone Therapy and its Effect on Asthma

Ghaida Al Harthi, Nada Al Ghannam, Renad Samaren,Aya Fayoumi (MSC in RC), Dr.Afnan Al Raimi, Dr.Moufida A. Al Weslati

Introduction:
Asthma is a chronic respiratory disease that affects millions of people worldwide, and bronchodilators, including short-acting and long-acting agents, are widely used in its management. Evidence from previous studies indicates that reliance on short-acting β2-agonists (SABA) as stand-alone therapy is inadequate for achieving optimal asthma control and for preventing exacerbations. Despite these recommendations, SABA monotherapy continues to be prescribed in routine clinical practice. In Saudi Arabia, variations in healthcare delivery, prescribing patterns, and access to specialist care across different cities may contribute to inconsistent asthma management and suboptimal patient outcomes. However, there is a lack of multicity data evaluating the real-world effectiveness of SABA used alone compared with other treatment strategies. Addressing this gap is important from a public health perspective, as poor asthma control increases healthcare utilization and disease burden. Therefore, this cross-sectional study aimed to evaluate the effectiveness of short-acting bronchodilators (SABA) used as stand-alone therapy compared with other treatment modalities, including combinations of SABA, long-acting bronchodilators (LABA), and oral medications, in controlling asthma symptoms among adult patients with asthma across multiple cities in Saudi Arabia

Methodology:
The study was conducted from February to May 2023 among Saudi nationals and residents in the kingdom. A survey questionnaire was disseminated among asthmatic patients. 301 responses were collected with a response rate of 78.4%. The questionnaire collected data on demographics, medical history, and treatment options.

Result and discussion:
The study population consisted of predominantly young females (55.6%) with a mean BMI of 23±5.6. Most participants were in the age range of 18 to 24 years old. Results revealed that patients who utilized both SABA and LABA accompanied by oral medication, had better control over their asthma symptoms, fewer exacerbations and hospitalizations compared to those who only used short-acting bronchodilators as-needed or on intermittent basis. Other factors that impacted treatment plans and symptom management included smoking status (non-smokers had better control over their asthma (RRR= 0.258, p= 0.032)) , city of residence (asthmatics residing in al Qassim, Tabuk, Aseer, and Jizan showed poorer or partial asthma symptom control ((RRR=-17.698, P=0.000),(RRR=-0.677,P=0.540),(RRR=-16.399,P=0.000),(RRR=-1.204,P=0.223) respectively), recurrence of exercises, and exposure to chemicals. Certain inhaled chemicals, such as ammonia, carbon monoxide, and petrochemicals, were found to impact airways integrity and increase exacerbations.

Conclusion:
Ultimately, our study suggests that the use of short-acting bronchodilators with long-acting bronchodilators and oral corticosteroids may be more effective in controlling asthma symptoms than using short-acting bronchodilators only. Further research is needed to confirm these findings and explore other potential treatment options for asthma management.

Key words:
Asthma control, SABA ,LABA, treatment plan, determinant factors.

Impact of Fire Smoke Exposure on Lung Function Among Firefighters in the Eastern Province of Saudi Arabia

Zainab Ahmed Al Shihab, Amnah Hussain Al-Abbas, Fatimah Abdulaziz Alowa, Fatimah Abdulaziz Al sire and Noor Al Khathlan

Background:
International evidence indicates that repeated exposure to fire smoke adversely affects firefighters' respiratory health, leading to respiratory symptoms, airway inflammation, hyper-responsiveness, and gradual decline in lung function. However, data from Saudi Arabia are limited. This study aimed to evaluate the impact of fire smoke exposure on lung function and respiratory symptoms among firefighters in the Eastern Province of Saudi Arabia.

Methods:
A cross-sectional study was conducted in November 2025 among adult male active-duty firefighters working at Civil Defense Centers in the Eastern Province. Socio-demographic characteristics and respiratory symptoms were collected through face-to-face interviews using a structured questionnaire adapted from the European Community Respiratory Health Survey (ECRHS II). Lung function was assessed using a portable spirometer, and exhaled carbon monoxide (CO) levels were measured using a Micro+™ Smokerlyzer®.

Results:
Thirty firefighters participated in the study. The mean ± SD values for height, weight, and BMI were 176.83 ± 6.26 cm, 83.35 ± 13.64 kg, and 26.61 ± 3.89 kg/m², respectively. The mean duration of service was 11.44 ± 5.54 years. Most participants (76.7%) were involved in firefighting activities 3–4 days per week, and 96.7% worked more than 8 hours daily. Fourteen participants (46.7%) reported that their work affected their breathing. In the preceding 12 months, the most commonly reported respiratory symptoms were coughing (24.1%), shortness of breath (17.2%), and wheezing or whistling (17.2%). Predicted spirometric values for FEV_1/FVC, FVC, FEV_1, PEF, $FEF_{25–75}$, FEF_{25}, and FEF_{75} were all above 80%. The median exhaled CO level was 4 ppm. No significant correlation was observed between years of firefighting service and pulmonary function parameters.

Conclusion:
Although firefighting was not associated with measurable impairment in lung function or elevated CO levels, a considerable proportion of firefighters reported respiratory symptoms, particularly coughing, shortness of breath, and wheezing. The absence of significant spirometric decline may be related to participants' physical fitness, height, and the physically active nature of their work. Further studies with larger sample sizes and longitudinal designs are recommended to better understand the long-term respiratory impact of fire smoke exposure among firefighters in Saudi Arabia.

The Effect of Sunlight Exposure and Skin Colour on the Accuracy of Oxygen Saturation Readings between a Smartwatch and a Standard Pulse Oximetry

Raid M. Al Zahrani, Jameel Hakeem, Ziyad F. Al Nufaiei, Lena A. Al Ziad, Hoor N. Shaker, Leena B. Almutairi

Background:
Blood oxygen saturation levels (SaO2) need monitoring consistently for a health variety of conditions. Measuring of blood oxygen saturation levels (SaO2) requires invasive procedure. Hence, measuring peripheral oxygen saturation (SpO2) by pulse oximetry is preferred; because it is continuously accessible, non-invasive, precise, and affordable. Latest days smartwatches are used to track real-time vital signs such as heart rate and peripheral oxygen saturation (SpO2) routinely. This study aims to compare the accuracy of blood oxygen saturation results between smartwatches versus traditional pulse oximetry focusing on the effect of skin color and lighting conditions.

Objectives:
to examine the effect of skin color and sunlight on the results of oxygen saturation through pulse oximetry.
to examine the effect of skin color and sunlight on the results of oxygen saturation through a smartwatch.
to compare the results of oxygen saturation between a pulse oximetry and a smartwatch.

Methodology:
Setting: king Saud bin Abdulaziz University for Health Sciences in Jeddah.
Subjects: Healthy university students who have a smartwatch and/or are dark skinned.
Study design: This study was a non-interventional experimental study.
Sample size: Students in king Saud bin Abdulaziz University for Health Sciences are estimated to be 13,161 students. Based on a 95% confidence level and a 5% margin of error, the sample size was estimated to be 354 participants using Raosoft.
Sampling technique: The probability stratified random sampling technique was used.
Data collection: Oxygen saturation, heart rate, and body temperature were measured using a standard pulse oximetry and a smartwatch before and after sunlight exposure. Skin color was categorized using Monk skin tone scale. Data was analyzed using JMP.

Results:
The present analysis of 78 healthy participants, with a mean age of 20.78 years. The participants were predominantly female (70.51%) and 21.79% of them were identified as having dark skin, while the remaining participants were light skinned for comparative analysis. while the smartwatch accurately detected the heart rate in comparison of standard pulse oximeter, a notable increase in heart rate measurements post sun exposure from both pulse oximeter ($p<0.0001$) and smartwatch ($p<0.0001$). The primary data analysis, which focused on SpO2 comparison from both devices, revealed that SpO2 readings from the smartwatch differed significantly from the pulse oximeter both before ($p<0.0004$) and after ($p<0.0001$) sunlight exposure, indicating an accuracy issue. In contrast, heart rate measurements showed no significant difference between pulse oximeter and smartwatch at pre-sunlight exposure ($p<0.1007$). Categorization by participant skin tone demonstrated further important findings, as significant differences between the devices for both SpO2 and heart rate were observed in both light and dark-skinned groups. Notably, these variations were more substantial in individuals with darker skin, suggesting that skin pigmentation is a key modifier of device performance and accuracy. The secondary variables analysis revealed no correlation between UV index and body temperature.

Conclusion:
Our study demonstrates that measuring the SpO2 through a smartwatch compared to the pulse oximetry is significantly affected by the two conditions (pre sunlight exposure and post sunlight exposure) and skin color, however, heart rate results did not show a significant difference under baseline conditions (pre sunlight exposure). These findings indicate that consistency of the smartwatch on tracing SpO2 and HR depends on the context restricted to specific populations and environments. Our study supports these challenges with practical evidence, such as, identifying specific settings (sunlight exposure), and demographic (skin color) variables that can impair both the precision and consistency of the readings which provided via smartwatch.

Recommendations:
It is recommended in future studies to do an ABG if possible to support and strengthen the accuracy of the findings.

Establishment of Real-Time Alarm-Based Patient-Ventilator Asynchrony Monitoring System Using YOLOv8 Deep Learning Model

Ms. Shoug Saleh Alhbabi, Ms. Maryam Alsinan , Dr. Maher Alquaimi

Objectives:
To develop an AI model to detect in real-time seven PVAs, and evaluate the efficiency of a deep learning real-time alarm-based system in detecting Patient Ventilator Asynchrony.

Methods:
The prototype was trained using data simulated in the lab using SERVO-U and PB 980 ventilators, annotated using Roboflow, trained with YOLOv8 defaults on Google Colab (Tesla T4), and tested in real-time using a webcam in VS Code. Multiple approaches were used by simulating 100 pictures for each of the four types of PVA (Air Hunger, Double Trigger, Missed Trigger, Leak), 400 pictures in total. The model is currently being enhanced by training it on 2 additional types of PVA (Delayed cycle and Auto Trigger). The final model will be trained using real-patient data.

Results:
After collecting the data on PVAs types-Example (double trigger, missed trigger, air hunger, and leak)-and training the model, the results are the following:
-The model was able to detect PVA in real-time by mirroring the ventilator screen on a laptop.
-The model accuracy, including mAP, precision, and recall was greater than 98%.
-The model was able to clearly outline and label the PVA type for the healthcare provider to review and determine the accuracy of the detection.

Conclusion:
In conclusion, PVAs can be detected with high precision, aiding clinicians in monitoring and prioritizing patients using an open-source AI model created and trained by the team.

Prevalence of Tuberculosis Screening among Respiratory Therapists in Saudi Arabia

Dr. Jameel Hakeem, Mohammed Ghazzawi, Mohammed Qadh, Omar Youldash

Background:
Mycobacterium tuberculosis (TB) remains a major global health threat, causing the second-highest infectious disease mortality in 2022. Saudi Arabia reports 14 TB cases per 100,000 population, with the highest rates in Makkah region. Healthcare workers (HCWs) face elevated occupational risk, requiring systematic TB screening.

Methods:
Cross-sectional study employed a validated electronic questionnaire disseminated to SCFHS-registered Respiratory therapist providers. The survey assessed demographic characteristics, TB infection history, and adherence to screening protocols. Data analysis was conducted using SPSS/GraphPad Prism.

Results:
Among 296 respiratory therapists, predominantly from ICUs and ERs, 75% were BCG-vaccinated. Twelve percent (n=36) reported occupational TB infection (90% latent, 10% active). Only 50% of facilities conducted annual screening using TB skin TST (TST). While TB precautions were universally available during routine care, 50% reported inadequate emergency PPE. During Hajj season, 50 exposed workers showed 80% PPE non-compliance and 0% post-exposure testing.

Conclusion:
This study reveals critical gaps in TB screening implementation and in PPE compliance among Saudi respiratory therapists, particularly during high-risk periods such as Hajj. Enhanced training, standardized screening protocols, and improved emergency preparedness are essential for reducing occupational transmission of TB.

The Impact of the Social Interaction and Group Challenges by using Website, on Smoking Cessation

Dr. Bashar alzghoul, Mrs.Tarfa Alsabhan, Remas Alsuhibani, Dhay Alotaibi, Dana Alzahrani, Sarah Alomair, Fajer Alhassan

Introduction:
Smoking remains a significant public health challenge in Saudi Arabia, causing approximately 70,000 deaths annually. Although many smokers attempt to quit using traditional tools or apps, interaction remains a major barrier. Previous research has shown that social support and interactive features can enhance motivation, but there is a gap in digital tools specifically designed for Arab users.

Objective:
This study aimed to evaluate the effectiveness of an Arabic-language smoking cessation website "Anfask Tehem -أنفاسك تهمّ" that uses social challenges and group interaction to boost engagement and support among adult smokers in Saudi Arabia.

Methodology:
This study will target 40-100 adult smokers in Saudi Arabia over a period of one to two months. They will attend online educational sessions and join an on-site group chat. Three surveys will be conducted: at the beginning, midpoint, and end of the study. Website usage and chat participation will be tracked as engagement metrics.

Expected Results:
We believe that adding social elements and friendly challenges can make a real difference in helping people quit smoking. Based on earlier research, features like gamification and group support have shown positive effects in keeping users engaged and motivated. That's why we expect our Arabic website, designed to match the culture in Saudi Arabia and focused on group chats and shared challenges, to boost motivation and lead to better quitting outcomes. We also believe that the more participants interact with the platform, the more progress they're likely to make compared to those who aren't as active.

Conclusion:
These findings may help develop more effective and culturally appropriate smoking cessation methods for Arab populations, with a focus on group interaction.

An Innovative 3D-Printed Connector for Safe Switching Between Maximum Inspiratory Pressure Measurements and Mechanical Ventilator Without Patient Disconnection

Maher Alquaimi, Mohammed Almughaleq, Abdullah Alfaris

Background:
In critical care settings, mechanical ventilation is used to support patients who cannot breathe adequately on their own. To assess the strength of the diaphragm muscle and monitor a patient's respiratory condition, clinicians often measure the Maximum Inspiratory Pressure (MIP). However, the current method of measuring MIP requires disconnecting the ventilator, which can lead to some serious complications.

Objective(s):
To design and develop a 3D-printed connector that allows safe and efficient switching between the Mechanical Ventilator (MV) and the MIP measurement device without the need for disconnection the MV.

Methodology:
The connector was designed using Rhinoceros 3D software and printed with PLA material using the Bambu Lab X1 3D printer. The design features a three-port system with an internal L-shaped stopcock valve, allowing redirection of the airflow between the mechanical ventilator and the MIP measuring device to the patient.

Result:
A total of 80 test runs were conducted, with 10 trials under each condition. The mean pressure values obtained using the 3D-printed connector (AM2B) and the standard method were comparable across all tested weights. No statistically significant differences were found except at 5 kg ($p < 0.001$) and 10 kg ($p = 0.03$). However, these differences (0.9–2.7 cmH_2O) fall within the clinically acceptable variation of 2–20 cmH_2O.

Conclusion:
The connector enables safe and fast switching of the airflow between the mechanical ventilator and the MIP device to the patient without requiring disconnection from the ventilator. This design aims to minimize clinical risks, ensure safer and efficient MIP measurements, and enhance patient comfort.

Evaluation of the Impact of Simulation-Based Practical Work on the Performance, Knowledge, and Satisfaction among Respiratory Care Students

Shahad Alshaqaq, Shouq Alassaf, Areej Alzain, Manar Alhawashem, Fatimah Al-ghzawi, Dr. Bashar Alzghoul, Mrs. Tarfah Alsabhan, Ms. Shahad Alayyaf

Introduction:
Simulation has shown a significant impact on the practice and learning of healthcare practitioners. Unlike traditional laboratories, simulation allows observation of patient responses and improves the quality of students' performance and management. No prior studies in Saudi Arabia have examined simulation-based learning for mechanical ventilation management in bronchial asthma. This study aimed to assess the effect of simulation on satisfaction and performance among CAMSJ-IAU Respiratory Care students compared to traditional learning.

Methods:
The study involved 19 third-year respiratory care students. They were divided up into two groups: a simulation group (10 students) and a traditional group (9 students). Both groups attended identical lectures on the mechanical ventilation management of bronchial asthma but received different instructional methods, one group was taught using a simulation case scenario, while the other received traditional laboratory instruction. After the teaching sessions, both groups completed a case scenario. Performance and knowledge were evaluated using a checklist, and student satisfaction was assessed through a survey.

Result:
The final analysis has found that there was no significant difference between the two groups and that the students who learned in the traditional laboratory setting achieved higher grades and there is a significant positive correlation between performance and GPA in the traditional group. The satisfaction level was the same in both groups.

Conclusion:
The study concluded that simulation can be used as an alternative to the traditional
method in managing mechanical ventilation courses.

Keywords:
Simulation, Respiratory Care, Bronchial Asthma, Satisfaction, Mechanical Ventilation.

High-Flow Nasal Cannula Therapy in Saudi Arabia: Current Practices and Guideline Support

Shahad Alshaqaq, Shouq Alassaf, Areej Alzain, Manar Alhawashem, Fatimah Al-ghzawi, Dr. Bashar Alzghoul, Mrs. Tarfah Alsabhan, Ms. Shahad Alayyaf

Background:
High-flow nasal cannula (HFNC) therapy has emerged as a widely utilized noninvasive ventilation method for various respiratory conditions across different age groups. However, recent studies showed that the practice of HFNC therapy varies among clinicians, which suggests the lack of guidelines to unify clinical practice with HFNC therapy across each institution. We aimed to determine the HFNC therapy practice and investigate the availability of clinical guidelines to support safe practice in Saudi Arabia.

Methodology:
This cross-sectional Survey-based study. Convenience sample of 109 health care workers, including respiratory therapist, physicians, and nurses, from hospitals across Saudi Arabia participated in the study. The survey consists of 16 questions covering demographics, HFNC therapy practice, disease management, initiation, and guidelines availability.

Results:
109 responses showed: 50.4% were respiratory therapists, 13.7% physicians, and 35.9% nurses. 58.4% had 1-5 years of experience, 16.1% had 6-10 years, and 25.6% had over 11 years. 53.2% managing adults, 28.4% managing pediatrics, 18.4% managing neonates. HFNC therapy was most used in adult ICU (27.9%) and least in general care (14.2%). 52.25% indicated HFNC therapy guidelines available, 16.22% not available, and 31.53% unsure.

Conclusion:
This study showed the lack of HFNC therapy practice guidelines at the hospitals in Saudi Arabia.

Key words:
High flow nasal cannula therapy, HFNC, guidelines, clinical practices, Saudi Arabia.

Smoking Prevalence, Habit, and Health Awareness Among inmates in the Eastren Region of Saudi Arabia

Dr.Sondus AL-Aidarous , Abdullah AL-Abdulmuhsin , Ahmed Saleh , Eyad Alamri , Abdullah Dair , Waleed Albariqi

Background:
Smoking is a pervasive health concern within prison populations worldwide, often driven by factors such as psychological stress, limited recreational opportunities, peer influence, and restricted autonomy. Inmates are generally found to have higher smoking rates compared to the general population. Despite this, limited data is available from the Gulf region, particularly in Saudi Arabia. The Eastern Region, with its diverse and growing inmate population, lacks comprehensive studies on smoking behaviors, making it difficult to design targeted interventions.

Research Objective:
This study aims to assess the prevalence and patterns of smoking among inmates in the Eastern Region of Saudi Arabia. It seeks to identify key factors contributing to smoking initiation, including whether smoking began prior to or during incarceration. Additionally, the study will explore inmates' awareness of the health risks associated with smoking, their past experiences with smoking cessation efforts, and their interest in participating in future cessation programs. A particular focus will be placed on understanding the role of the prison social environment—such as peer networks and prison culture—in influencing smoking behaviors.

Methodology:
A cross-sectional survey design will be employed, utilizing a structured, easy-to-understand questionnaire distributed to a representative sample of prisoners. The questionnaire will capture demographic data, smoking history, frequency, duration, triggers, awareness of smoking-related health risks, and previous cessation attempts. Participants will also be asked about their attitudes toward quitting and their openness to joining cessation initiatives if offered within the prison system.

Hypothesis:
It is hypothesized that smoking prevalence will be high among inmates, with a significant portion initiating the habit during incarceration. It is also anticipated that some inmates may express interest in quitting, particularly if supportive cessation resources are made available.

Measurement of treatment burden in cystic fibrosis: A systematic review

Rana Altabee, Martin J Mwamba , David Turner, Gwyneth Davies, Janice Abbott, Nicholas J. Simmonds, Jennifer A. Whitty, Siobhan ´ B. Carr, Garry Barton, Rory A. Cameron

Background:
Cystic fibrosis (CF) is a chronic condition that requires complex and long-term treatments. While substantial research has explored treatment burden associated with CF; its impact remains complex to quantify. This review aims to identify the different methods used in the literature to measure treatment burden in people with CF (pwCF).

Method:
Five databases were searched for interventional and observational studies that focused primarily on treatment burden. The studies were presented using narrative synthesis structured around the perspective of treatment burden (subjective vs. objective).

Results:
This review synthesised 17 articles, which utilised subjective and objective measures separately or collectively. Twelve studies used subjective treatment burden measures (CF-specific and generic scales), while 14 studies used objective measures (treatment time, volume and complexity, and cost). Eight studies investigated treatment burden reported by proxy on behalf of children with CF. The most used measures were treatment time (9/17) and CF questionnaire-revised (CFQ-R) treatment burden subscale (6/17). Older age and lower lung function were associated with greater burden, treatment time, and complexity. Caregivers/parents reported worse treatment burden compared to children with CF (6-13 y/o) when completing the same measure.

Conclusion:
No single measure used in the reviewed studies fully the multidimensional nature of treatment burden and summarised it in a single score. Given the rapidly evolving landscape of CF care a pragmatic approach to capture a broader array of treatment burden dimensions may be to routinely complement subjective
measures with objective measures.

Evaluating the correspondence between the EQ-5D-5L and disease severity and quality of life in adults and adolescents with cystic fibrosis

Rana Altabee, Siobhan B. Carr, Janice Abbotte , Rory Cameron, Daniel Office, Nicholas J. Simmonds, Jennifer A. Whitty, David Turner, Garry Barton

Background:
The EQ-5D is the recommended measure to capture health-related quality of life (HRQoL), recognised for use in health technology appraisal bodies. In order to assess whether it is appropriate to use the EQ-5D for making decisions about the cost-utility of treatments in cystic fibrosis (CF), this study assesses the performance of the EQ-5D-5L in adults and adolescents with CF.

Method:
This was a cross-sectional observational survey study of patients with CF attending a single large CF centre. Participants were asked to complete a survey that included two HRQoL measures; the EQ-5D-5L and CF Quality of Life (CFQoL) questionnaires.

Results:
Among 213 participants, the median EQ-5D-5L index score was 0.76 (IQR 0.66 – 0.84) and the visual analogue (EQ-VAS) was 70 (60 – 80). Both the EQ-5D index and EQ-VAS discriminated between disease severity based on lung function ($p = 0.01$ and $p < 0.01$, respectively) and pulmonary exacerbation ($p = 0.02$ and $p < 0.01$, respectively); however, EQ-VAS differentiated between more lung function severity groups compared to EQ-5D index. The EQ-5D-5L demonstrated convergent validity as its dimensions, index score, and EQ-VAS had significant correlations with most CFQoL domains.Though, EQ-VAS significantly predicted more domains of CFQoL (4 domains) compared to EQ-5D index (only 1 domain).

Conclusion:
The generic EQ-5D-5L performed adequately in discriminating between CF disease severity, and its index score and EQ-VAS had moderate correlations with CFQoL. However, using a complementary condition-specific measure alongside the EQ-5D-5L can provide better insight of HRQoL in CF and benefit the process of cost-utility analysis.

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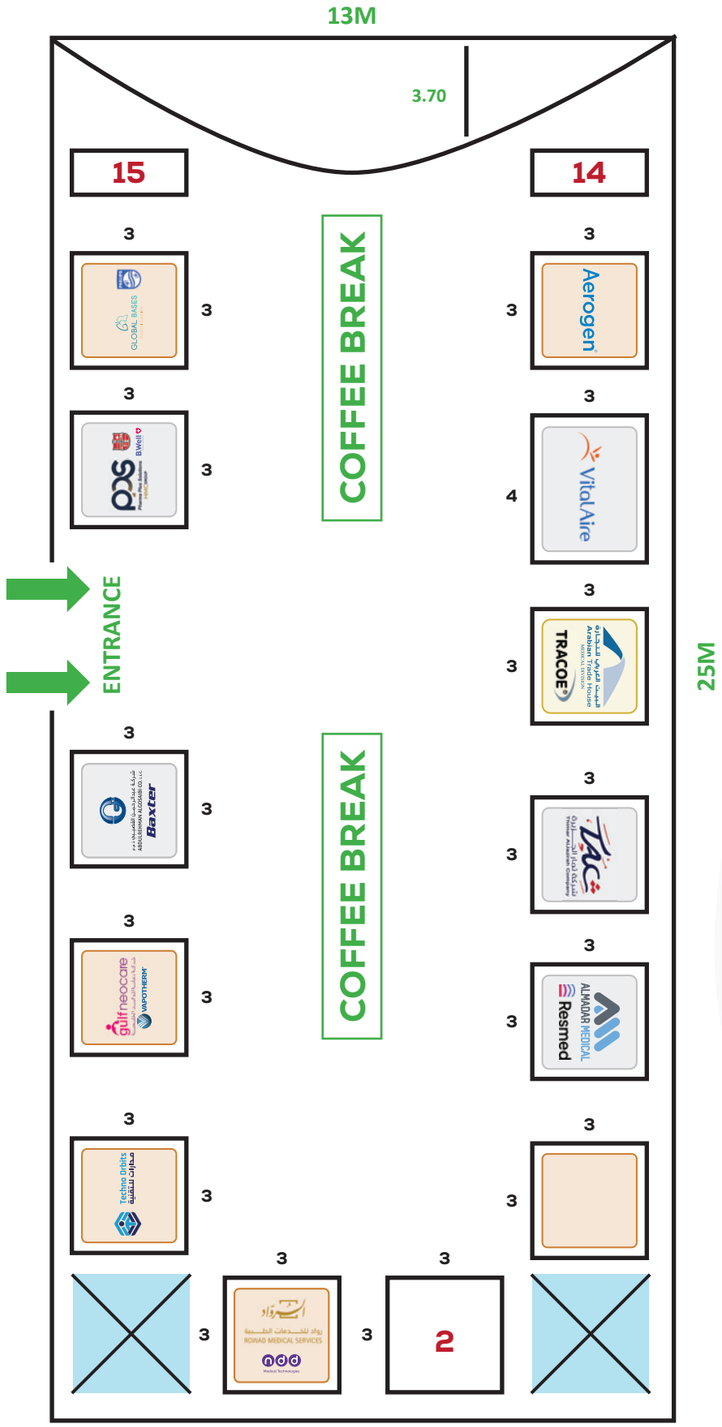

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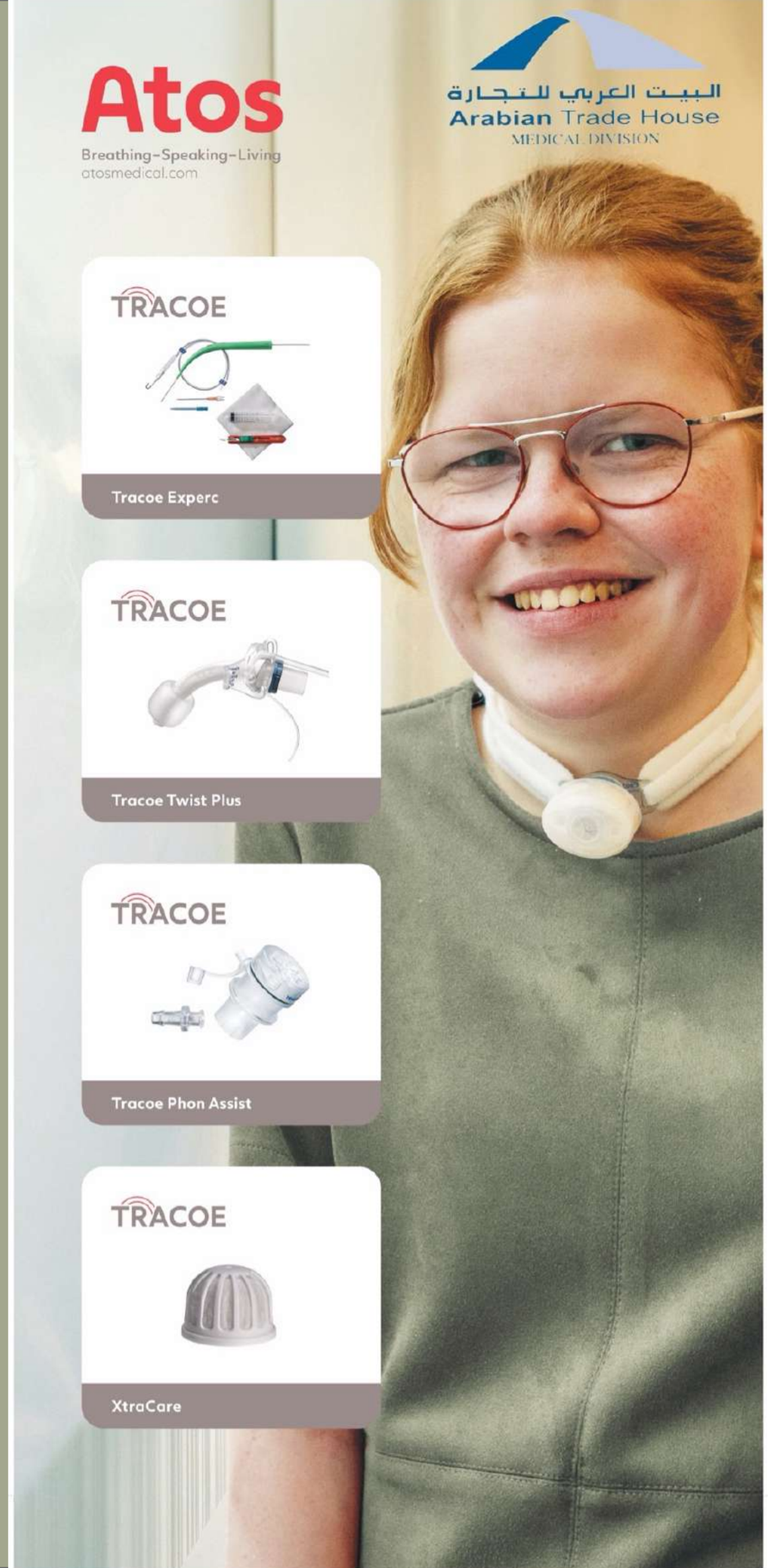

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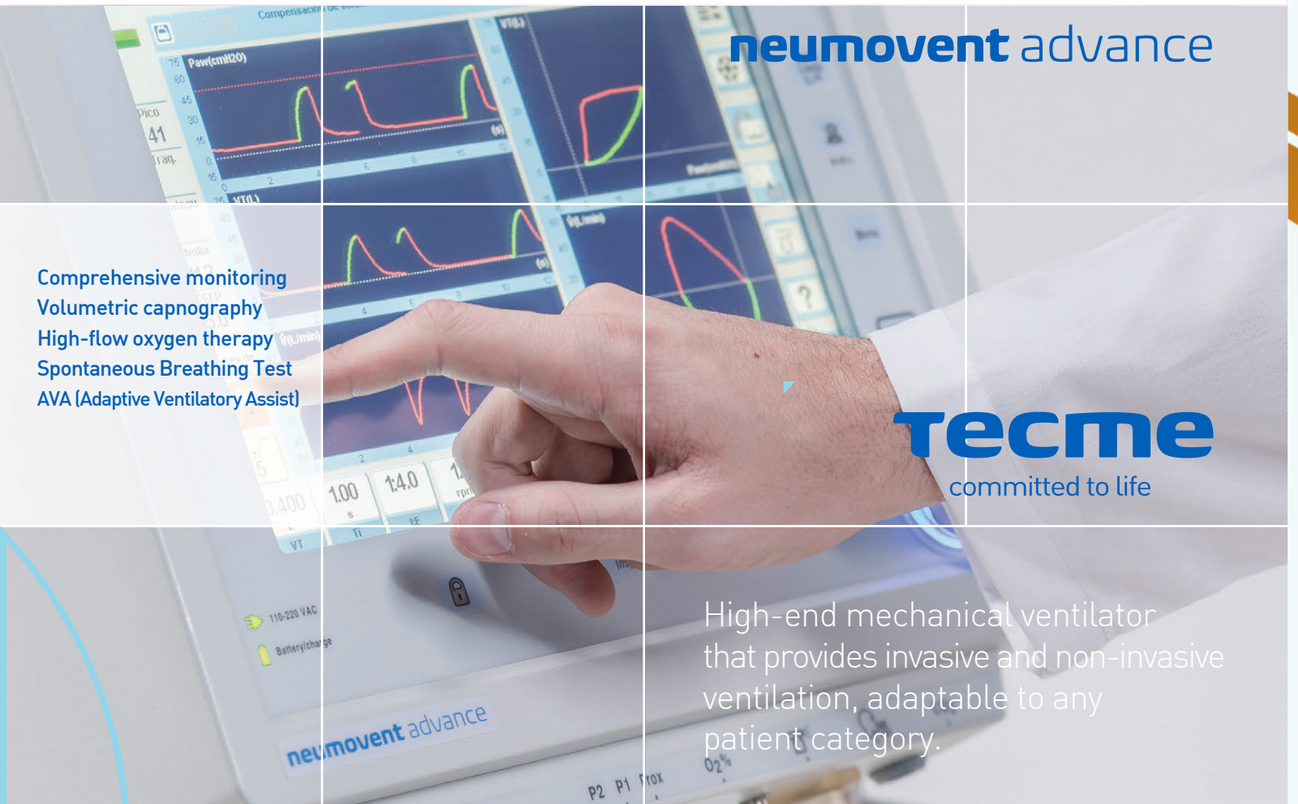

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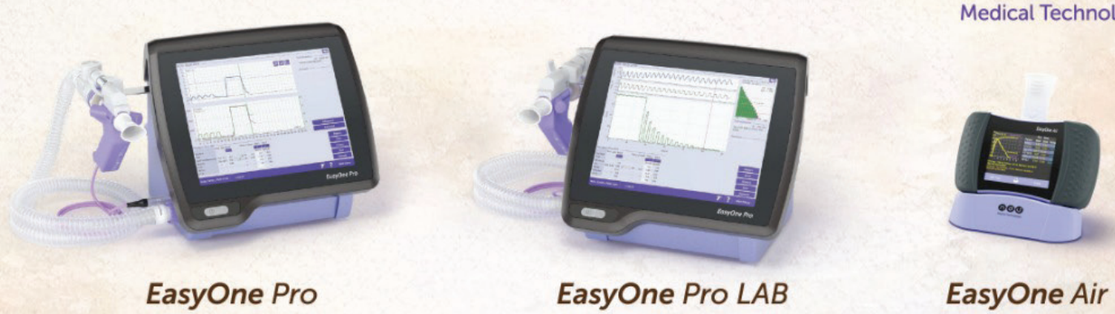

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Arabian Trade House (ATH) is a medical company established in 1978 by Mr. Safouh Horanieh, involved in the sales and distribution of medical devices, disposables, equipment, and pharmaceuticals in the Kingdom of Saudi Arabia and other Gulf countries with 5 local branches and 2 international branches.

Arabian Trade House (ATH) is committed to advancing the healthcare services in GCC countries and Middle East by providing high quality products, training, and education, consistent with the current medical standards for the prevention, diagnosis, and treatment of illness.

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Also, for another sectors ATH also dealing with other companies like Cair LGL – France, Angio Dynamics – USA, Haemonetics – USA and about 37 other companies.

In the treatment of rare disease, ATH leading this sector by dealing with companies like Sanofi – USA, BTG plc – UK, SOBI – Sweden, Piramal/ Mallinckrodt – USA and Immedica Pharma AB – Sweden.

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Who are we?
VitalAire Arabia is the Saudi entity of the VitalAire brand. VitalAire is an international brand for homecare activities of the Air Liquide Group, experts in Diabetes, Sleep Apnea, Oxygen Therapy,Ventilation and other Home Healthcare services.

Vision
Vitalaire Arabia s ultimate ambition is to become the leader of home healthcare in Saudi Arabia. By offering continuous educational awareness to patients and caregivers we help our patients commit to their treatments and achieve a better quality of life. Vitalaire Arabia is engaged to improve value in healthcare for the benet of patients and reduce the cost for the healthcare system.

Mission
VitalAire Arabia's mission is to provide the best services and solutions for diabetes care, sleep apnea management and respiratory care to patients and medical professionals. VitalAire Arabia takes care of its patients by combining innovative care services and technologies.

Our Solutions
- Home healthcare sevices focusing on the management of chronic diseases.
- Diabetes management,with CGM and insulin pump treated patients.
- Continuous Positive Airway Pressure (CPAP). for patients diagnosed with obstructive sleep apnea.
- Home Ventilation sevices. Long-term oxygen therapy for people with chronic
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Pharma Plus Solutions (PPS) is a Saudi-based healthcare company under HMC Group, specializing in the marketing and distribution of high-quality pharmaceutical, medical, and laboratory products.
We act as a strategic bridge between global healthcare manufacturers and the Saudi market — offering full-scale commercialization support from regulatory registration to nationwide distribution.
With a commitment to excellence, compliance, and innovation, PPS enables healthcare partners to expand efficiently within Saudi Arabia and across the GCC region.

Vision
To be the trusted partner of choice for global healthcare innovators seeking access to the GCC healthcare marketleading with trust, speed, and locally rooted excellence.

Mission
To accelerate the success of global and regional healthcare partners by delivering integrated solutions in regulatory affairs, market access, distribution, commercialization, and localization — all while championing innovation, compliance, and sustainable value in alignment with Saudi Vision 2030.

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Thimar Aljazirah Company (TAC) is a leading healthcare distributor in the Kingdom of Saudi Arabia, specializing in pharmaceutical, medical, and dental solutions. With roots stretching back over four decades, TAC partners with internationally recognized manufacturers to deliver high-quality products, advanced technologies, and reliable services to hospitals, clinics, and healthcare providers across the Kingdom.

- **Headquarters:** Riyadh, Saudi Arabia
- **Established:** 1980 (medical & healthcare division)
- **Industry Focus:** Healthcare & Cardiovascular, Pharma, Dental, Medical Equipment.
- **Reach:** 5 Branches across Saudi Arabia with thousands of clients and more than 30 global vendors partnerships.

Vision & Mission:

- To be the preferred value-adding healthcare services provider in the Middle East.
- To supply innovative pharmaceutical and medical products that improve and save lives, ensuring patient safety and sustained growth.

Core Strengths:

- Long-standing industry presence with deep market experience.
- Strategic international partnerships for cutting-edge healthcare solutions.
- Commitment to quality, compliance, and customer satisfaction.

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Our partners:

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2. Gastrointestinal business Unit
3. Anesthesia Business Unit
4. General Consumable Business Unit

Quite some time back, when the Kingdom was just a couple decades old, the Ministry of Health sensed the need for developing a Kingdom-wide healthcare system which would dramatically improve the welfare of its citizens. One of their first decisions was to build ten hospitals at the same time, at various locations. That decision was effectively the dawn of the Medical & Scientific service in Saudi Arabia. That very event also turned out to be a major milestone for us, a corner stone of what Algosaibi is today.

Established in 1944, **Abdulrehman Algosaibi GTC** put in a bid for furnishing and equipping those hospitals with the help of N.V. Philip of Holland. We won that tender, and not only we successfully equipped and furnished the first ten hospitals in Saudi Arabia, we as well learned a lot – from international sourcing practice, dealing with reputable companies, to good planning, logistics, distribution, and execution.
Since that time, the Medical and health care industry in Saudi Arabia has grown and matured, and we with it. Other than our initial range of furnishings and equipment, we have added pharmaceutical, vaccines and veterinary products.

Abdulrehman Algosaibi GTC as a company certified to both ISO 9001:2015 and BS EN ISO 1348:2016 is well known for its contribution to the Healthcare services in Saudi Arabia as leading Distributor in the healthcare field. We represent more than 125 major principals of Medical & Scientific Equipment, Hospital Supplies, Pharmaceuticals, Dental and Veterinary products from around the world. We have achieved the distinction of being amongst the Top 100 Companies in Saudi Arabia and the Top 100 Companies in the Gulf region. In 1997, we also qualified as one of the Top 10 Trading Companies in Saudi Arabia.

Currently our business is based on four key Business Operations namely Pharma and Biological Operations, Medical & Scientific Operations and Veterinary Division, each a specialized in providing a range of products and services.

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As a leading provider in our field, we are committed to enhancing people's health through exceptional service and fostering long-term relationships with our customers. Our dedication to pre and post-sales excellence remains steadfast.

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Therapy
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Home Care
We provide personalized and effective homecare support, tailored to individual needs, enhancing comfort and promoting better health outcomes in the familiar and supportive setting of your own home.

OUR MISSION

Our mission is to enhance healthcare outcomes by providing high-quality, innovative medical supplies and solutions. We are dedicated to supporting healthcare professionals and institutions with reliable products, exceptional service, and cutting-edge technology, all while fostering a commitment to improving patient care and advancing the medical field.

OUR VISION

Our vision is to revolutionize healthcare by being the foremost provider of innovative and reliable medical supplies. We aspire to elevate patient care and support healthcare professionals with cutting-edge solutions and exceptional service, striving to make a profound impact on global health and well-being.

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For regional inquiries, email MEAmarketing@aerogen.com.

References
1. Aerogen Data on File.
2. 30-354 REV U Aerogen Solo Instruction Manual.

Gulf NeoCare Company is a pharmaceutical and medical devices company, based in the Kingdom of Saudi Arabia.

The company was established in 2011 and is known for its high quality standards and specialized products.

Our strategy aims to be one of the best healthcare companies in the Kingdom of Saudi Arabia, the Arabian Gulf region and the Middle East.

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- Mission: Deliver cutting-edge technologies to enhance healthcare services and maintain market leadership.

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- Critical Care (CCU): Precision technologies to improve safety and outcomes.
- Laboratory & POCT: Fast, accurate diagnostics for informed decisions.
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