Innovating through backlogs: The NHS Surgery Conference 2022

1st March 2022- 10:50am – 1:20pm – GoToWebinar

Webinar hosted by Convenzis Group Limited

The NHS Surgery Conference 2022

We are taking a quick comfort break, please remain logged in. The next presentation will begin at 12:30pm.

Details of the next event in this series can be scanned via the QR Code. Full Agenda to be announced soon.
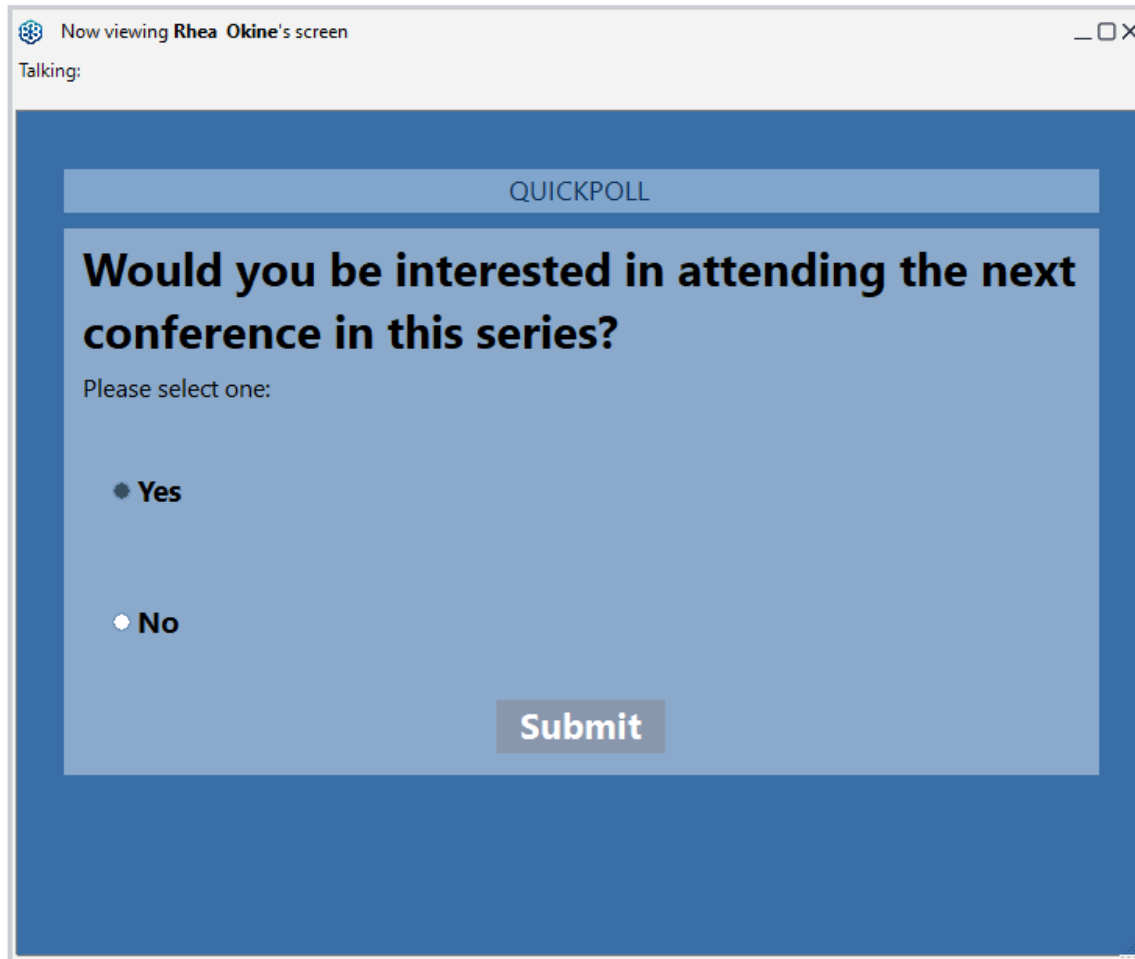
SCAN ME

Make sure you are connected via Computer Audio for the conference. You can test your audio via the 'Sound Check' tab.

If you have any questions or comments for Speakers across the day, please expand the Questions Section on the GoToWebinar panel. You will not be able to see each others questions.

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● Computer audio
○ Phone call
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MUTED

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Speakers (2- High Definition Audio D... ⌄

Talking:

▶ Attendees: 2 of 1001 (max)
▼ Questions

Q: Are you excited for the conference?

Will the slides be available post event?

Send

Test

Webinar ID: 883-751-403

GoToWebinar

Polls
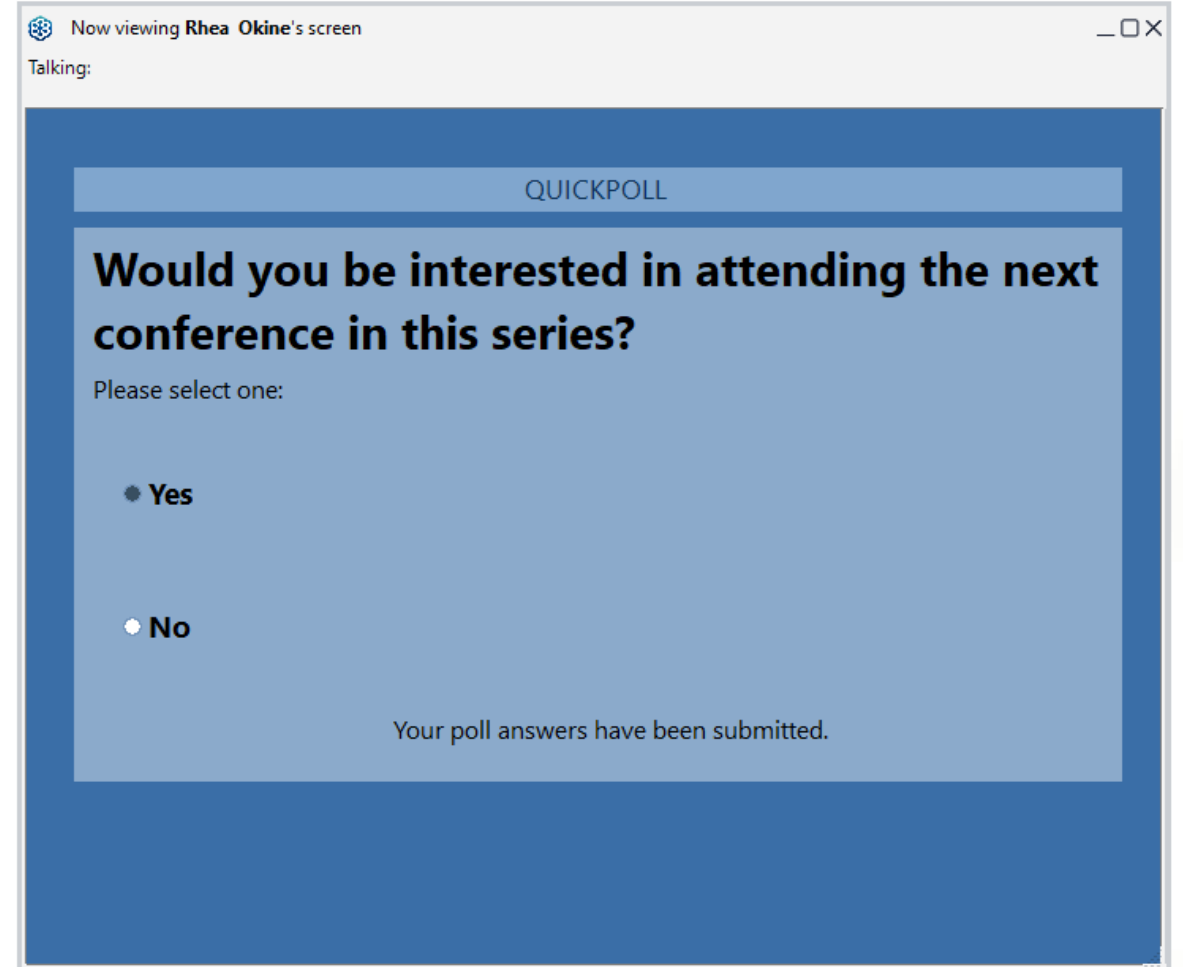
Click on **one** of the multiple choice options, then press '**Submit**'

Once **Submitted** your screen will look like this

Meet Todays Sponsors
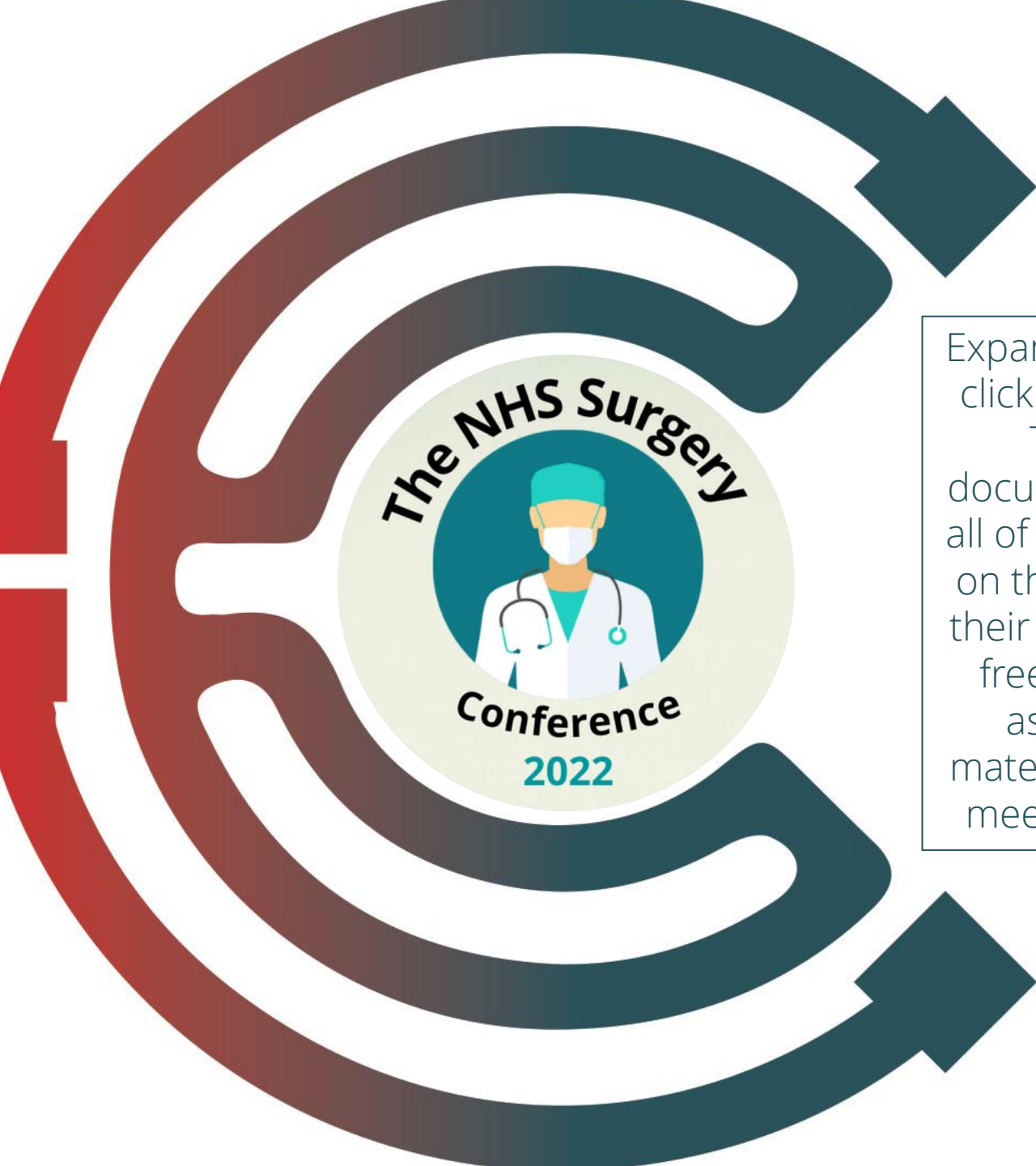
Expand the Handouts tab, and click on the Hyperlinked PDF. That will then open a document where you can view all of the Sponsor stands. Click on the Sponsor Logo to open their stand. There you will find free demos, downloadable assets and promotional material. You can also arrange meetings with the sponsors.

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Audio

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Computer audio
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MUTED

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Talking:

Handouts: 1

Convenzis Example Handout.pdf

Questions

[Enter a question for staff]

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GoToWebinar
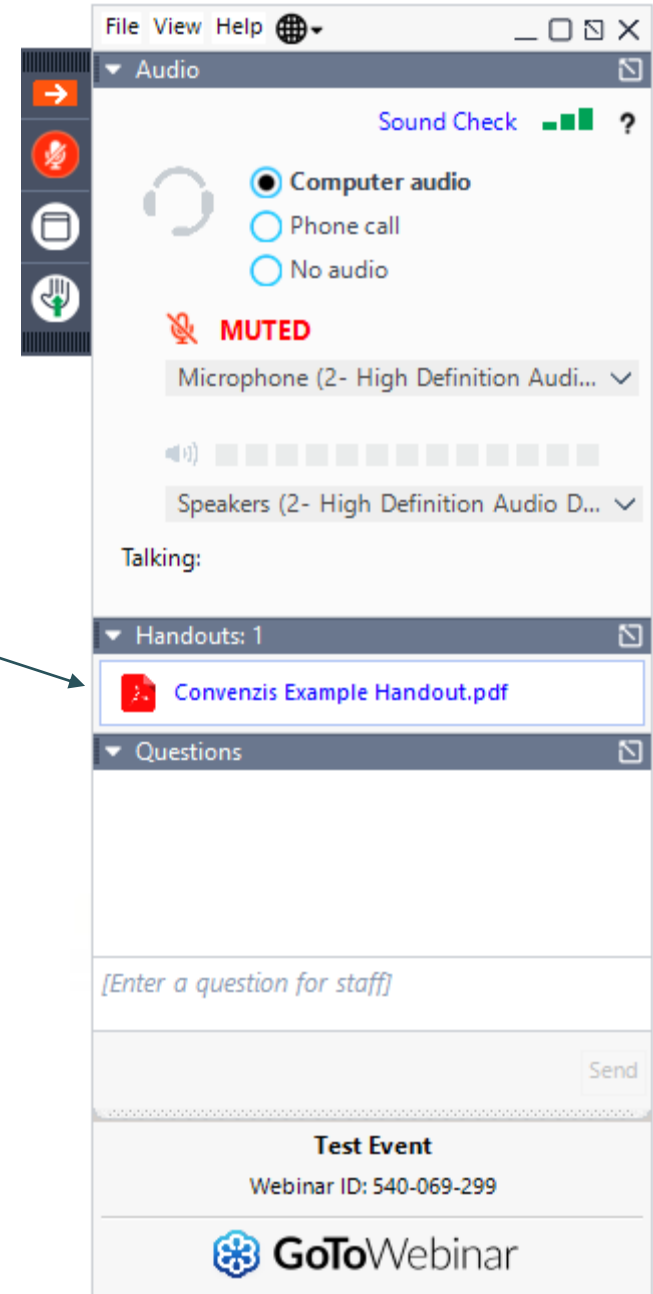
Jayant Vaidya Professor of Surgery and Oncology at University College London

Ian Binks, Business Development Manager – Global Clinical Solutions at Ascom & Hayley Valentine, Clinical Consultant at Ascom

Managing the bottlenecks in surgical pathways

Joined-up perioperative management with the Ascom Healthcare Platform

ascom

How can digital information improve surgical flow?

Identifying and removing bottlenecks
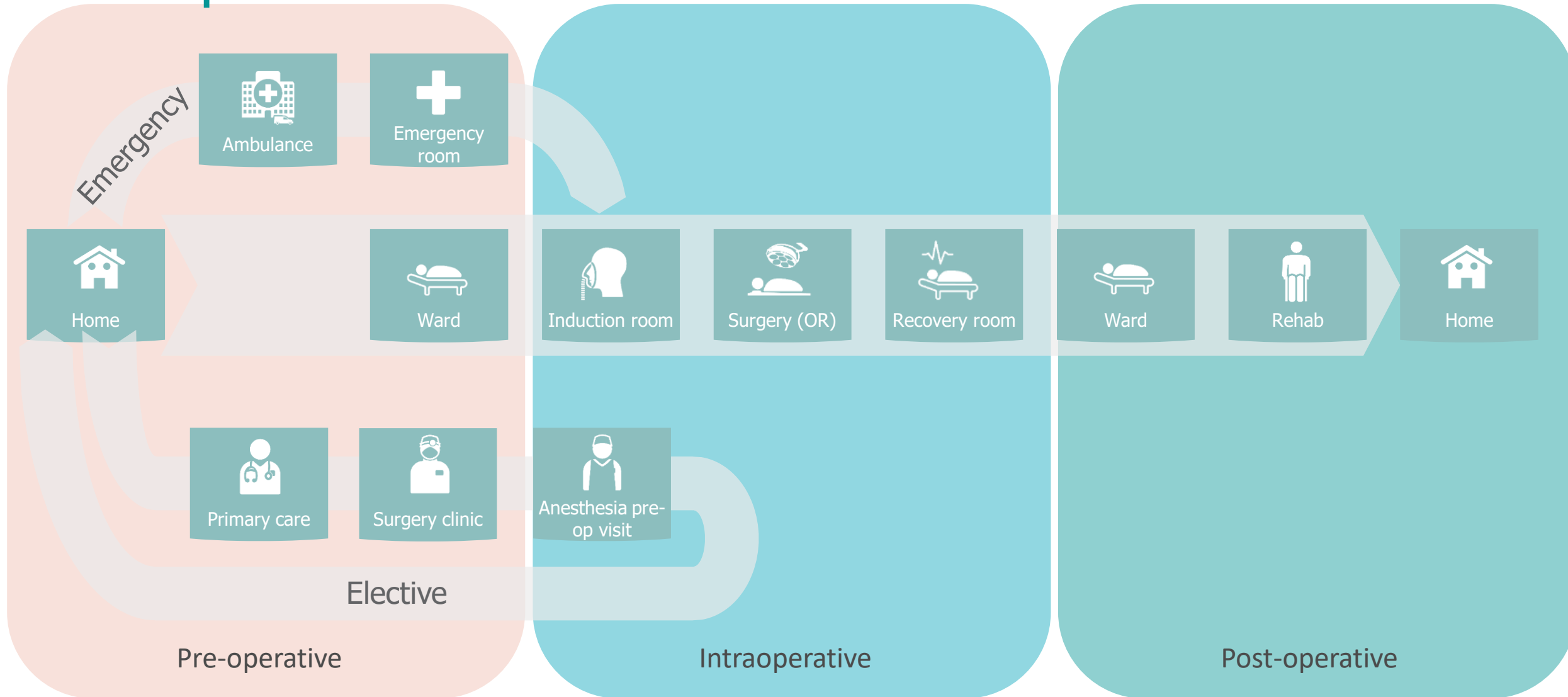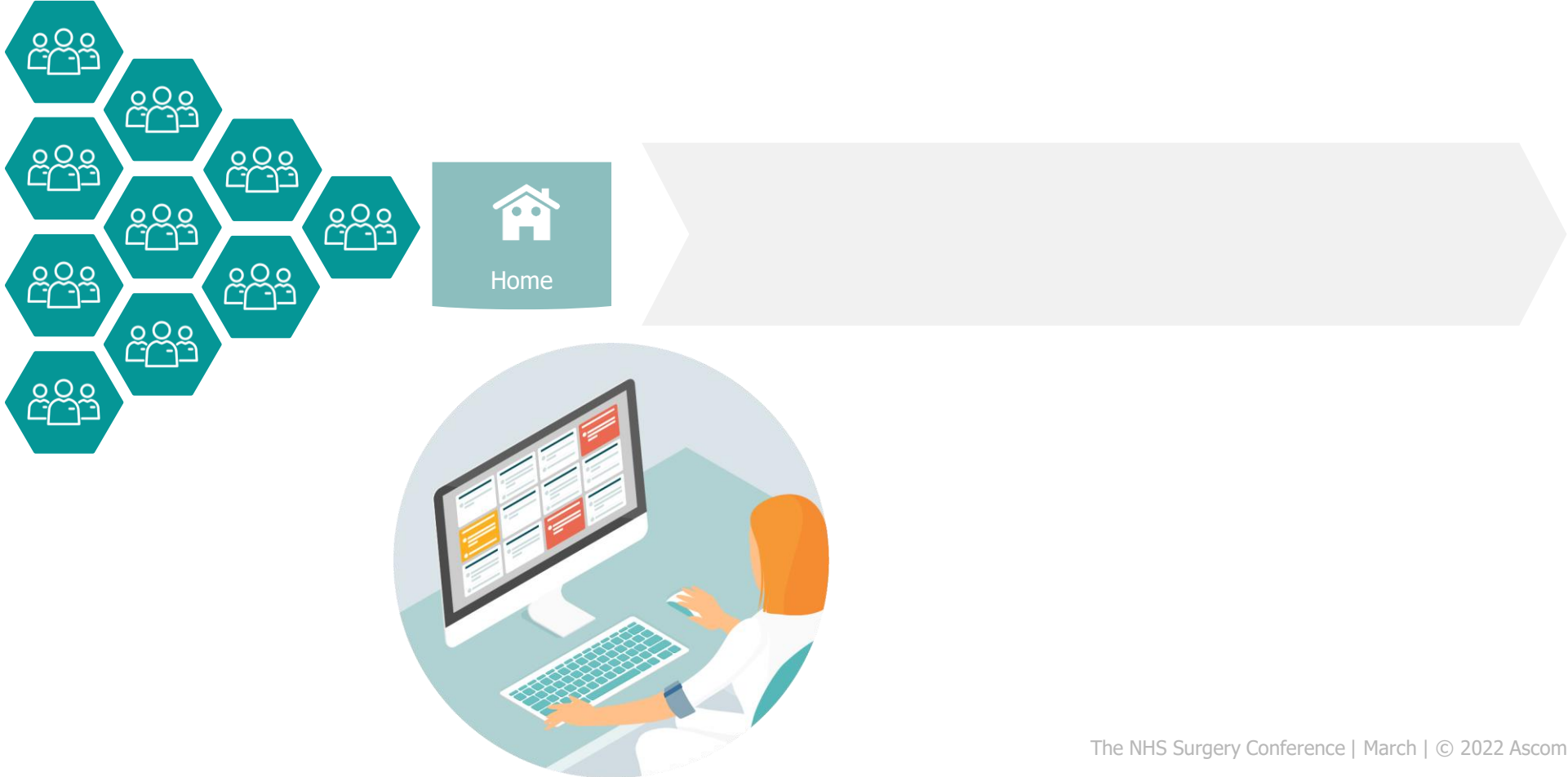
ascom

Server Room

Medical Assessment Unit

Intensive Care Unit

Command Control Centre

General Ward

Operation Room

Drug Room

Perioperative flow

Emergency

Ambulance

Emergency room

Home

Ward

Induction room

Surgery (OR)

Recovery room

Ward

Rehab

Home

Primary care

Surgery clinic

Anesthesia pre-op visit

Elective

Pre-operative

Intraoperative

Post-operative

ascom

Pre-operative challenges

Home

Pre-operative challenges

Home

Pre-operative challenges

Home
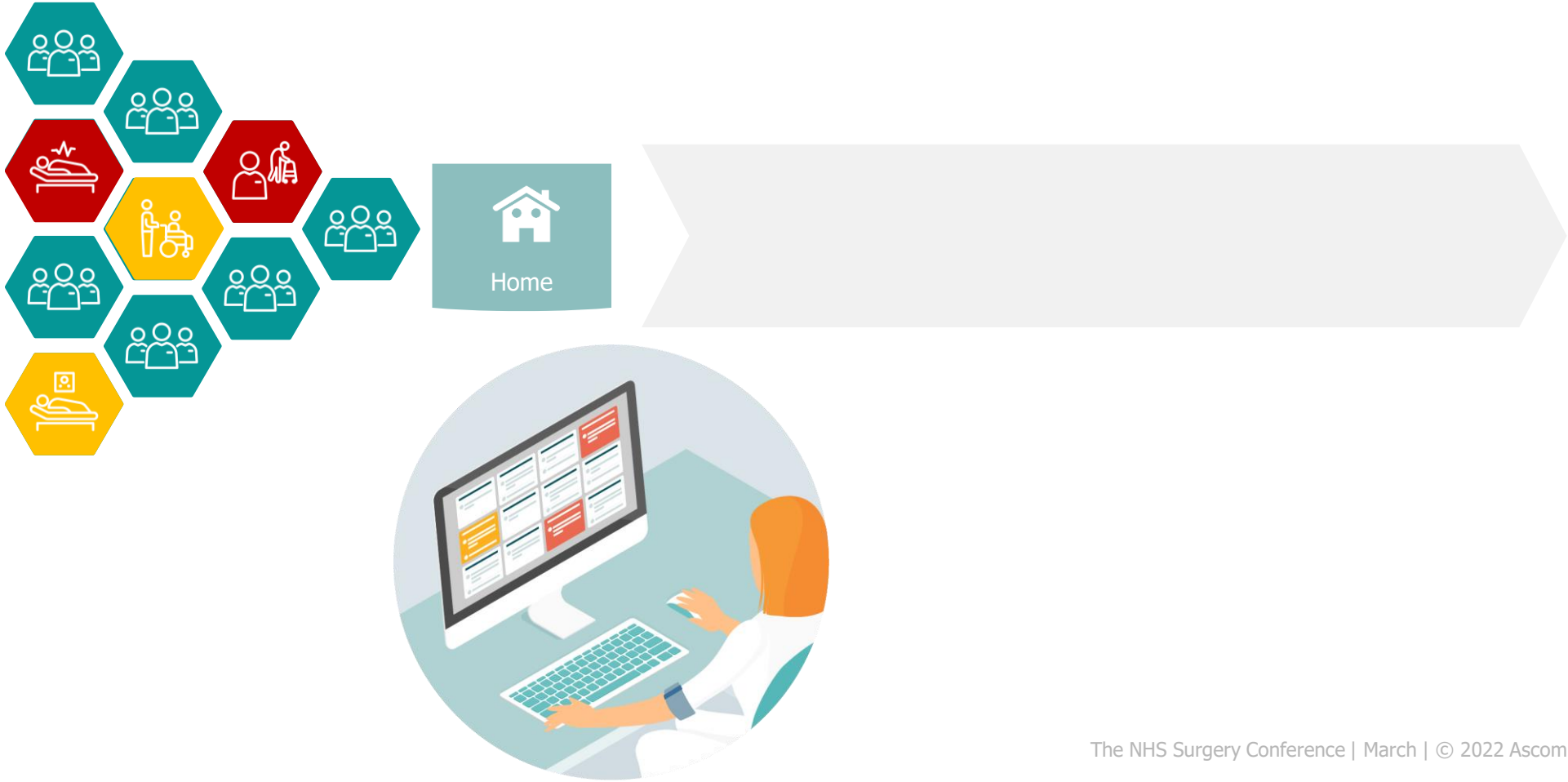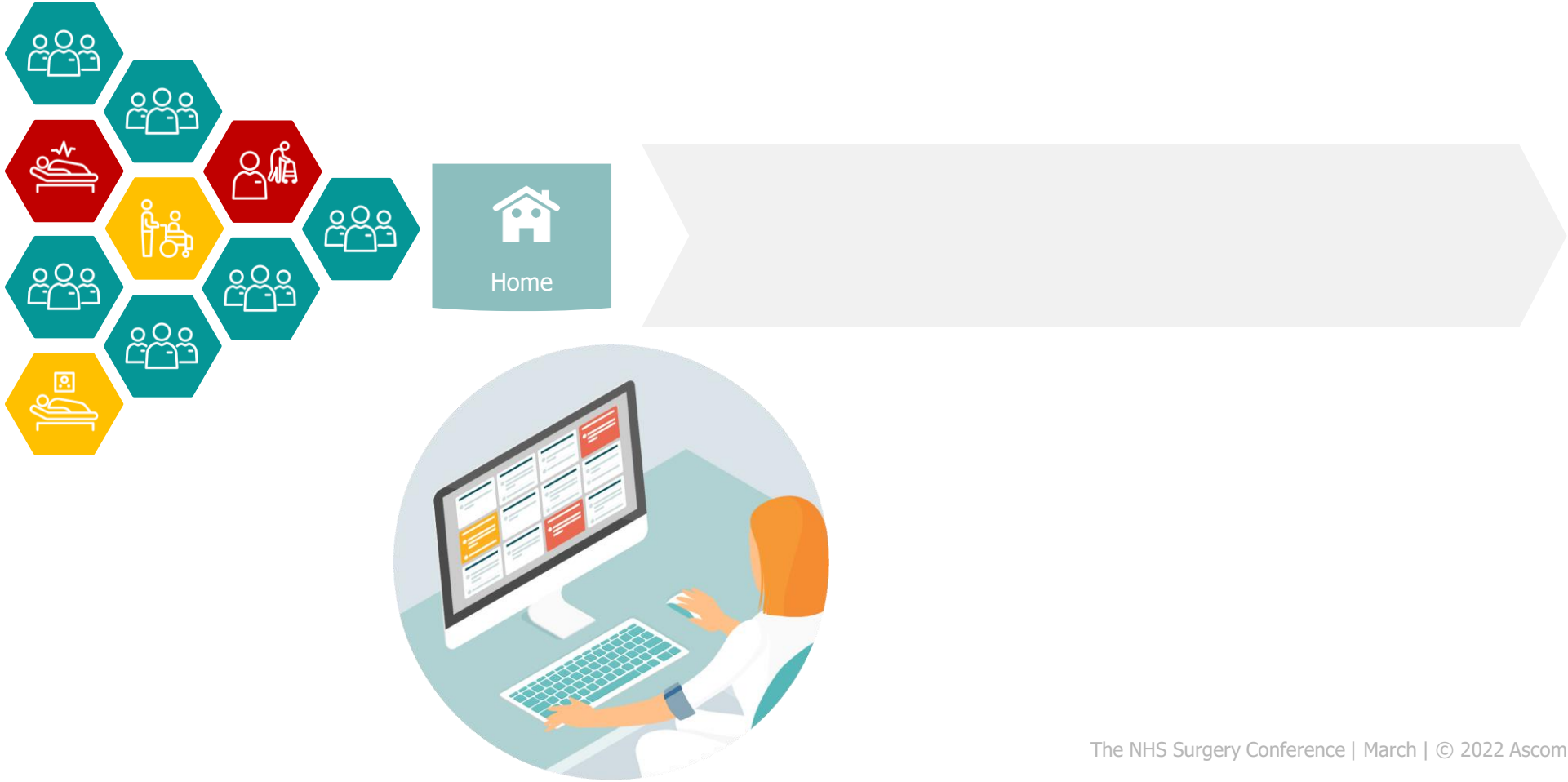
Pre-operative challenges

Identifying the bottlenecks
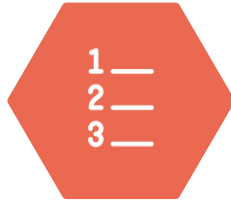
Inefficient scheduling

Paper-based assessments

Patient deterioration pre surgery

Multiple silos of information

Removing the bottlenecks

Smart scheduling tools

Digital assessments

Remote pre-operative monitoring

Vendor-neutral integrations

Perioperative flow

Home → Ward → Induction room → Surgery (OR) → Recovery room → Ward → Rehab → Home

Intraoperative

Intraoperative challenges

Identifying the bottlenecks

On-the-day cancellations

Static surgical lists

Poor inter-departmental communication

Multiple silos of information

Removing the bottlenecks

Pre-operative safeguards

Dynamic OR management

Seamless staff communications

Vendor-neutral integrations

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Perioperative flow

Home → Ward → Induction room → Surgery (OR) → Recovery room → Ward → Rehab → Home

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Post-operative

Post-operative challenges
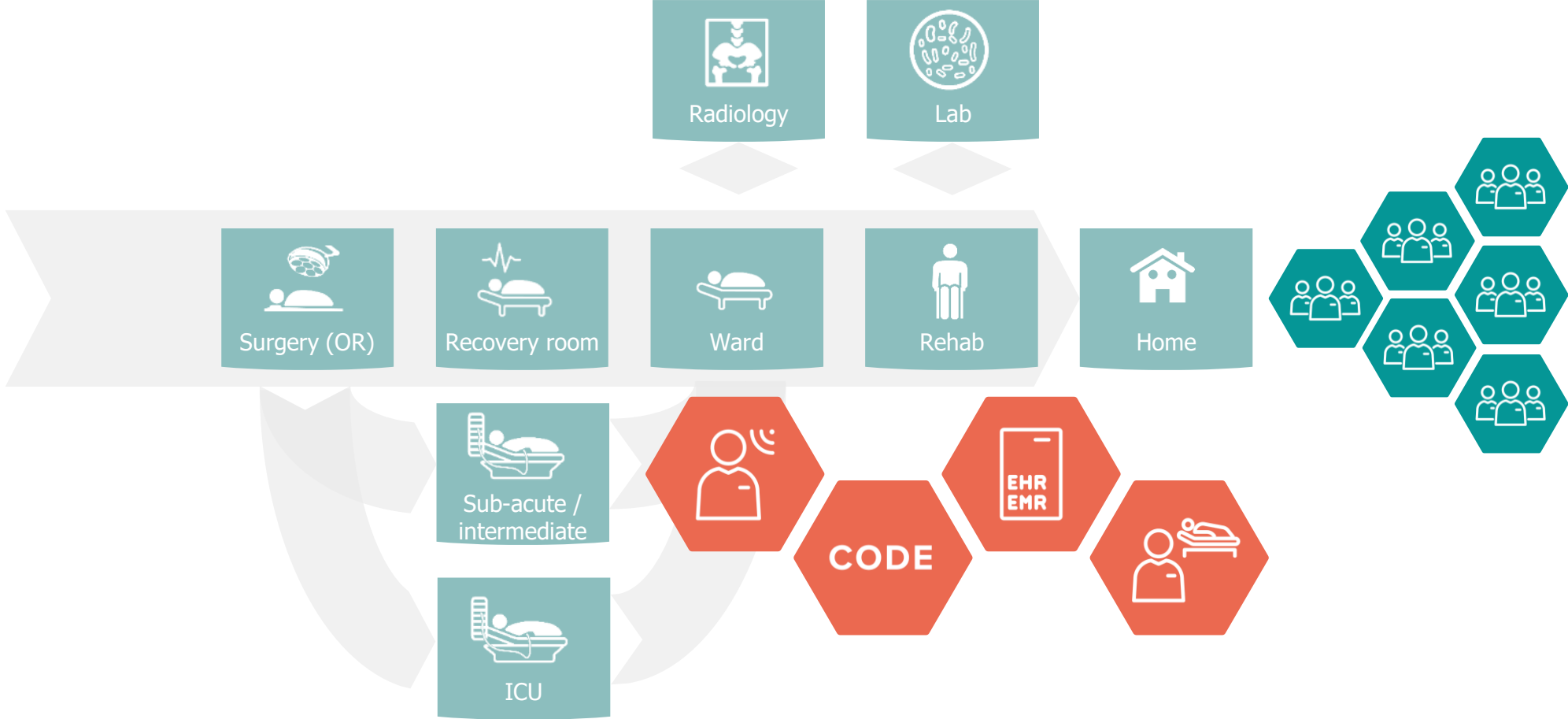
Identifying the bottlenecks

Monitoring multiple patients in recovery

Managing postoperative deterioration

Post-operative documentation
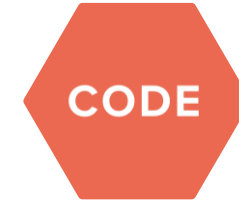
Recovery bed capacity

Removing the bottlenecks

Medical device integration

Alarm management and
clinical decision support

Digital surgical documentation

Wearables support for early discharge

Suboptimal perioperative flow

| Home | | Ward | Induction room | Surgery (OR) | Recovery room | Ward | Rehab | Home |

Suboptimal perioperative flow

| Home | | Ward | Induction room | Surgery (OR) | Recovery room | Ward | Rehab | Home |
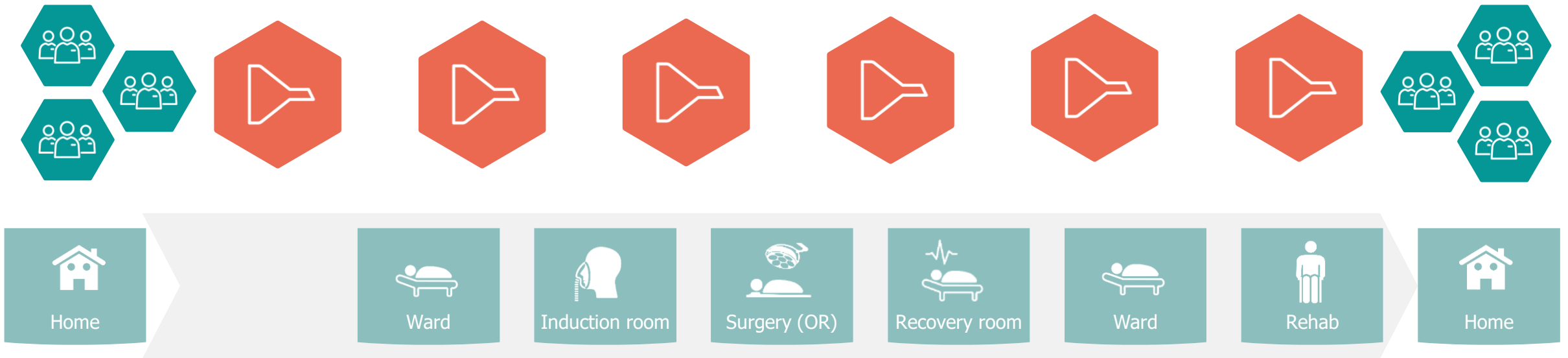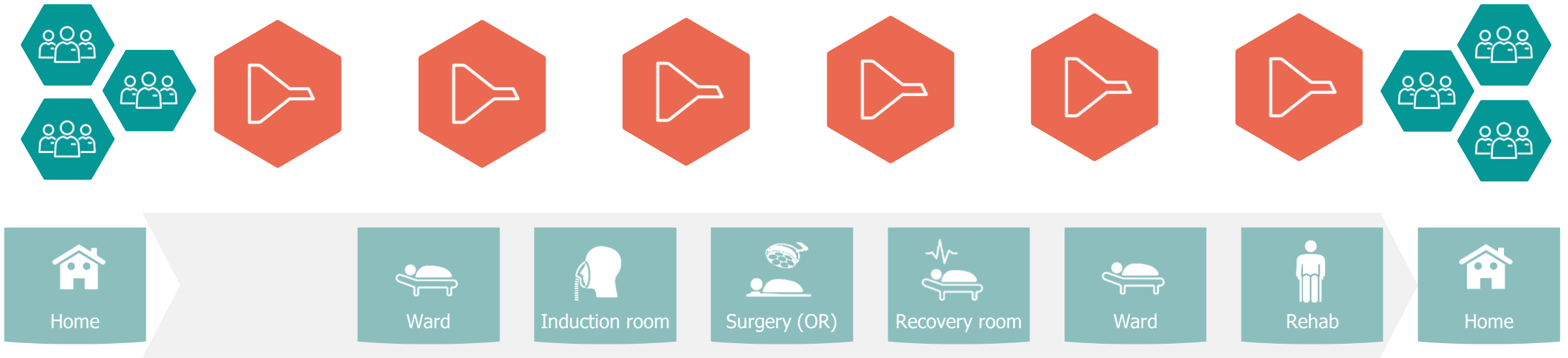
Optimising perioperative flow

| Home | | Ward | Induction room | Surgery (OR) | Recovery room | Ward | Rehab | Home |
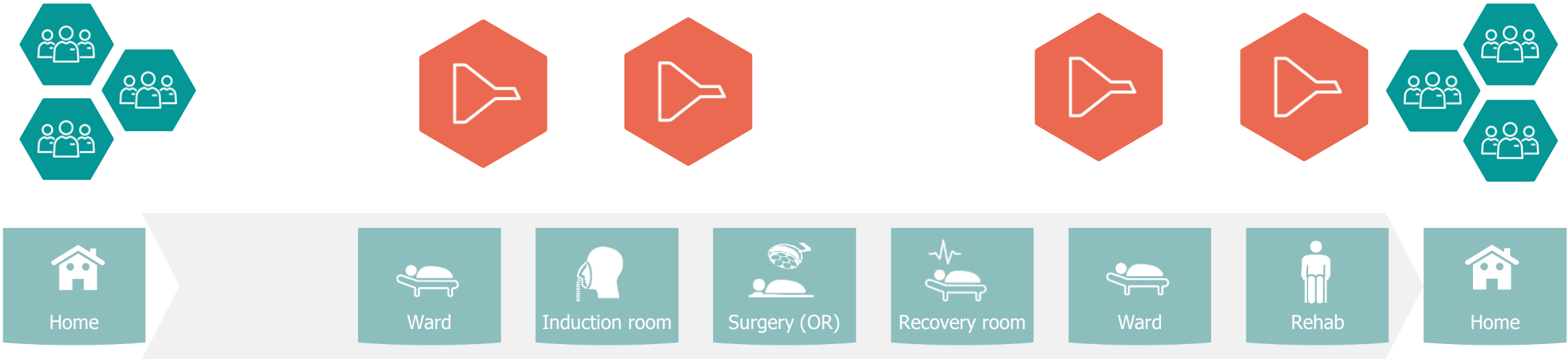
A whole-system approach

Smart scheduling tools

Digital assessments

Remote pre-operative monitoring

Dynamic OR management

Seamless staff communications

Pre-operative safeguards

Alarm management and clinical decision support

Medical device integration

Vendor-neutral integrations

Digital surgical documentation

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The Ascom Healthcare Platform
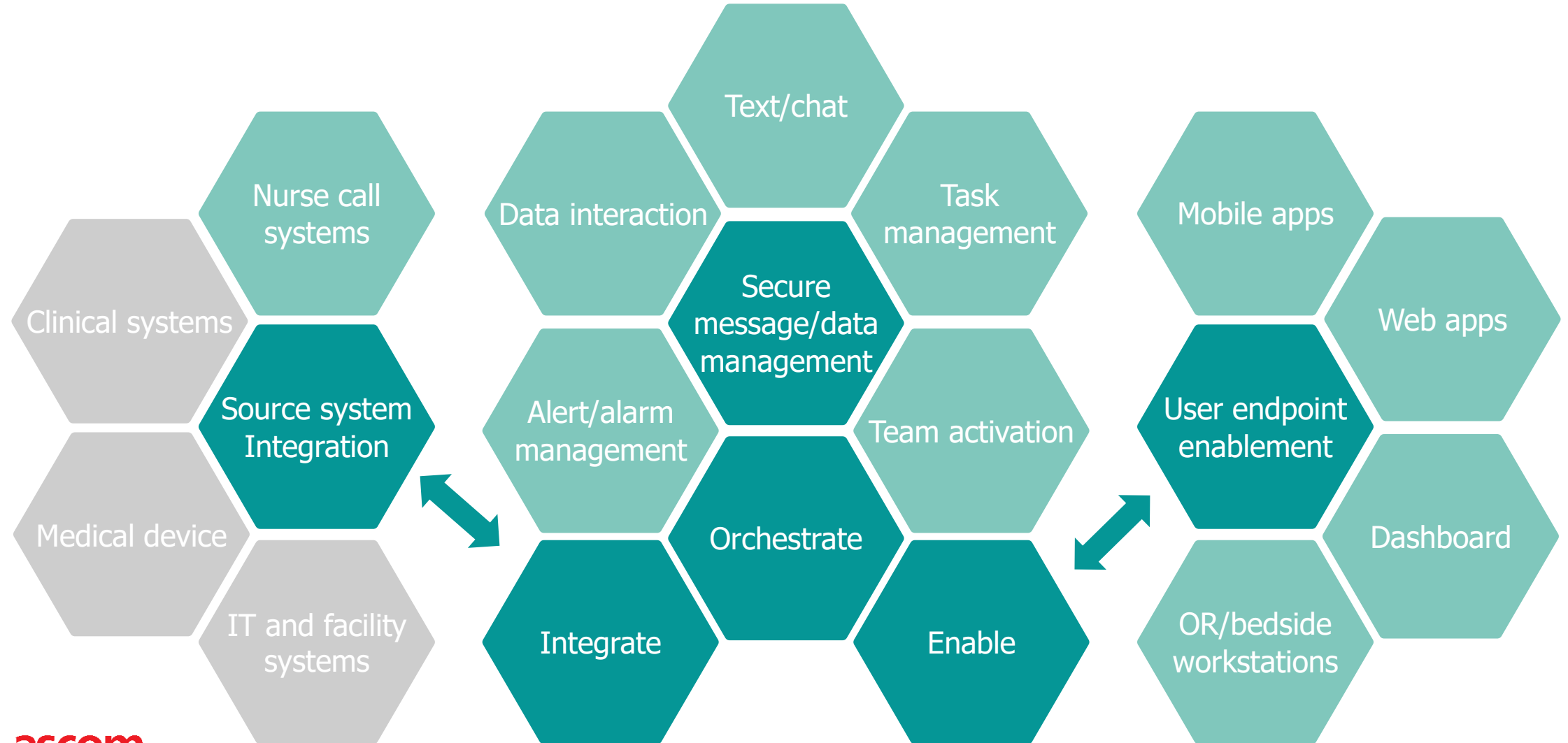
Why Ascom

Advantages of the Ascom proposal

End to end to solution
Seamless solution from surgical process to intensive care in one single database

Vendor neutral
Vendor neutral solution to integrate to any kind of Medical Device or Information System

Modular and Scalable
Solution is modular and scalable to adapt to needs of the organization

Customizability
The solution can be adapted to hospital specific workflows

Mobility
Main user features available on Mobile

ascom

Thank you

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ARTIFICIAL INTELLIGENCE IN NHS SURGERY: AN OVERVIEW

Dr Samaa Akhtar

MD, MSc (London), MRSPH (UK), ICH-GCP

Pediatric Cardiac Surgery Research Fellow

Convenzis Group : The NHS Surgery Conference 2022

CONTENTS

SURGERY IN THE UNITED KINGDOM

- **The NHS is the single biggest healthcare organization in the world**

- **Constitutes over 1.7 million staff**

- **Around 1 million patients are seen every 36 hours**

- **Around 5 million surgical admissions every year**

- **The Commonwealth Fund has ranked the NHS with top 4 performance when compared to 10 HIC countries and top 20 globally**

WE ARE THE NHS

EXHIBIT ES-1. OVERALL RANKING

COUNTRY RANKINGS
- Top 2*
- Middle
- Bottom 2*

	AUS	CAN	FRA	GER	NETH	NZ	NOR	SWE	SWIZ	UK	US
OVERALL RANKING (2013)	4	10	9	5	5	7	7	3	2	1	11
Quality Care	2	9	8	7	5	4	11	10	3	1	5
Effective Care	4	7	9	6	5	2	11	10	8	1	3
Safe Care	3	10	2	6	7	9	11	5	4	1	7
Coordinated Care	4	8	9	10	5	2	7	11	3	1	6
Patient-Centered Care	5	8	10	7	3	6	11	9	2	1	4
Access	8	9	11	2	4	7	6	4	2	1	9
Cost-Related Problem	9	5	10	4	8	6	3	1	7	1	11
Timeliness of Care	6	11	10	4	2	7	8	9	1	3	5
Efficiency	4	10	8	9	7	3	4	2	6	1	11
Equity	5	9	7	4	8	10	6	1	2	2	11
Healthy Lives	4	8	1	7	5	9	6	2	3	10	11
Health Expenditures/Capita, 2011**	$3,800	$4,522	$4,118	$4,495	$5,099	$3,182	$5,669	$3,925	$5,643	$3,405	$8,508
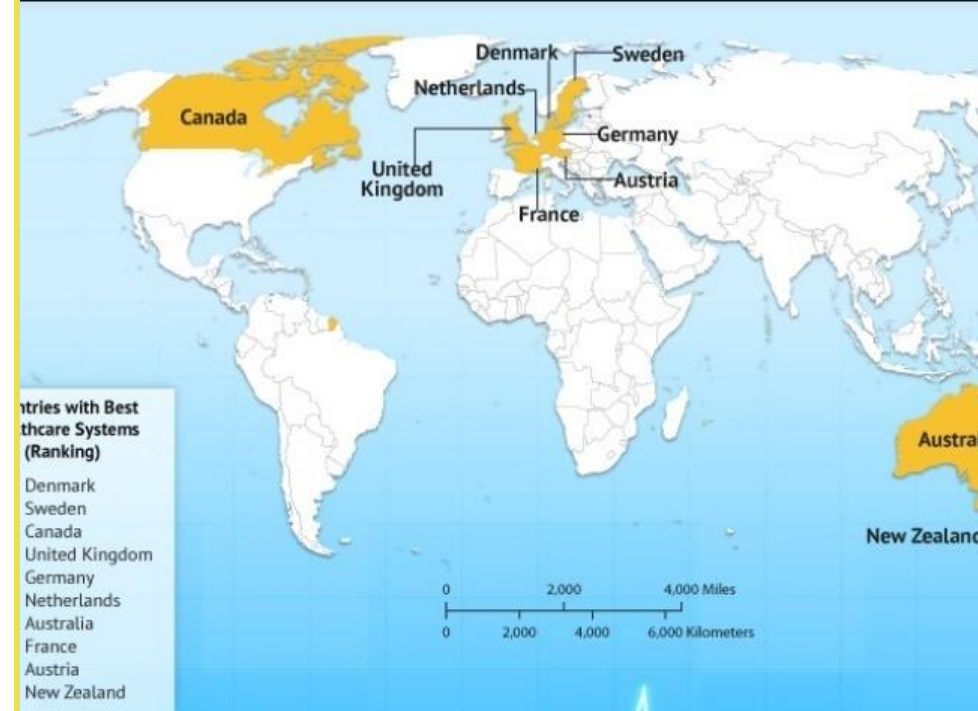
Notes: * Includes ties. ** Expenditures shown in $US PPP (purchasing power parity); Australian $ data are from 2010.

Source: Calculated by The Commonwealth Fund based on 2011 International Health Policy Survey of Sicker Adults; 2012 International Health Policy Survey of Primary Care Physicians; 2013 International Health

...ntries with Best
...thcare Systems
(Ranking)
Denmark
Sweden
Canada
United Kingdom
Germany
Netherlands
Australia
France
Austria
New Zealand

13, 482
CONSULTANT SURGEONS

125,378,073
AVERAGE ANNUAL SURGICAL PROCEDURES

85,181 (1.1%)
30-DAY MORTALITY

7.1 (3.1–11.0) DAYS
MEDIAN LENGTH OF HOSPITAL STAY

£4.5 BILLION 4% OF NHS BUDGET
ANNUAL COST OF SURGERY

NHS Surgery

SURGERY TRENDS

- The number of procedures is slowly increasing whilst the number of deaths is decreasing
- 3,000 operating theaters
- 1200 procedures per theatre per year
- 18% of surgeries are emergency surgeries
- The UK has 2.8 doctors per 1000 population, which is below the OECD average of 3.3

SPECIALTIES WITH HIGHEST ACTIVITY

General Surgery	1.3m procedures
Trauma and Orthopaedics	1.2m procedures
Urology	736,560 procedures

Source: The Royal College of Surgeons of England. (2020)

COMMON PROCEDURES

120,198 hernia repairs (all forms of hernia)

115,758 hip replacement

81,590 knee replacement

76,497 gall bladder removal

50,846 tonsillectomies

WAITING TIME

Huge rise in waits of more than a year

Patients waiting more than 52 weeks for routine treatments in England, by month
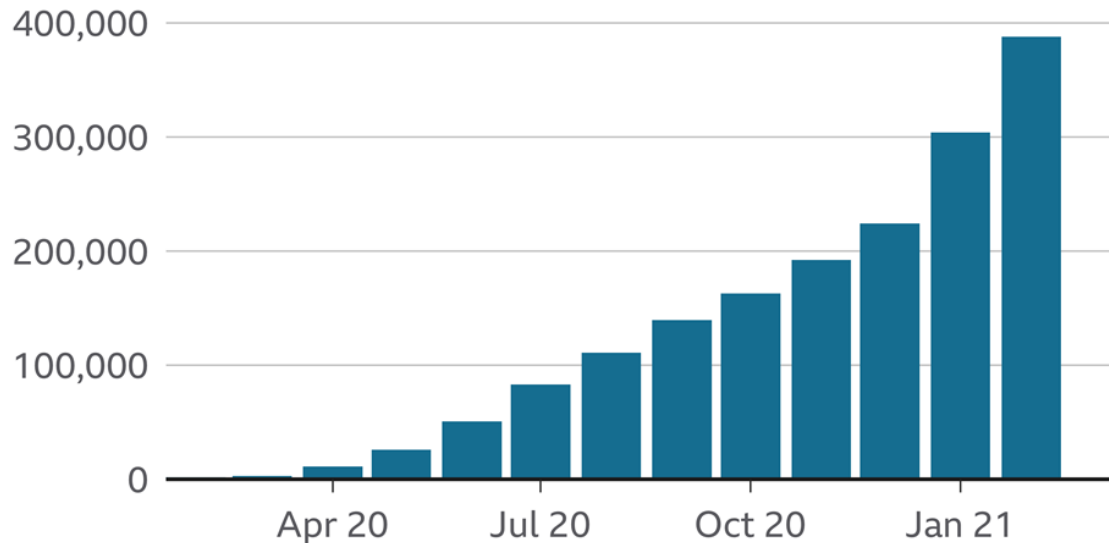
Source: NHS England

BBC

- The median waiting time for general surgery is 6 weeks

- Even though the number of surgeries have been increasing over the last decade, the waiting times are decreasing over time.

- From 13 countries, only 1.6 per cent of the UK population have unmet medical needs.

- The UK is also ahead of the curve when it comes to day surgery. For example, 47 per cent of tonsillectomies taking place as day cases.

COVID-19 IMPACT ON NHS SURGERIES

33.6%

Reduction in national surgical volume

2 358 420

Estimated backlog of surgeries

Reduction in elective surgeries

Reduction in emergency surgical procedures

38.6%

13.4%
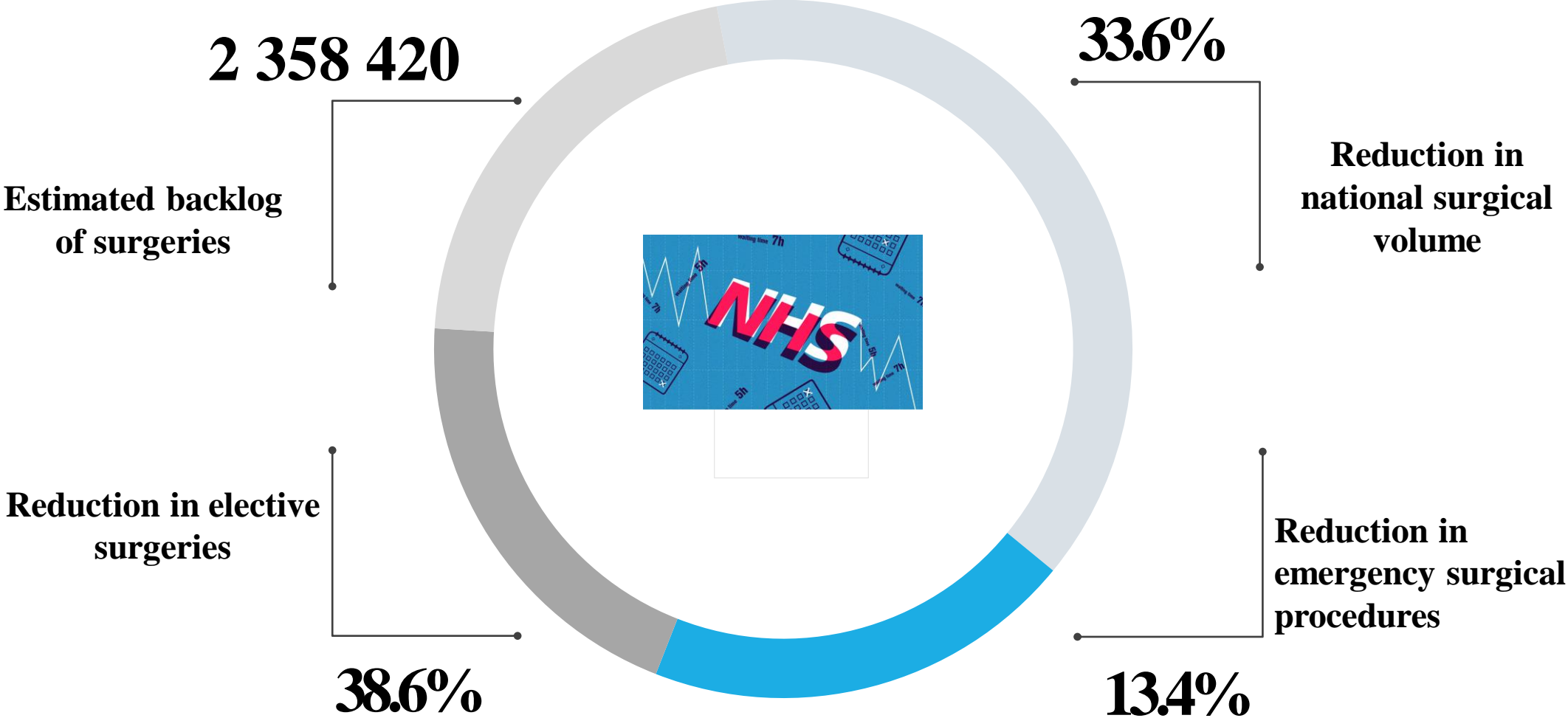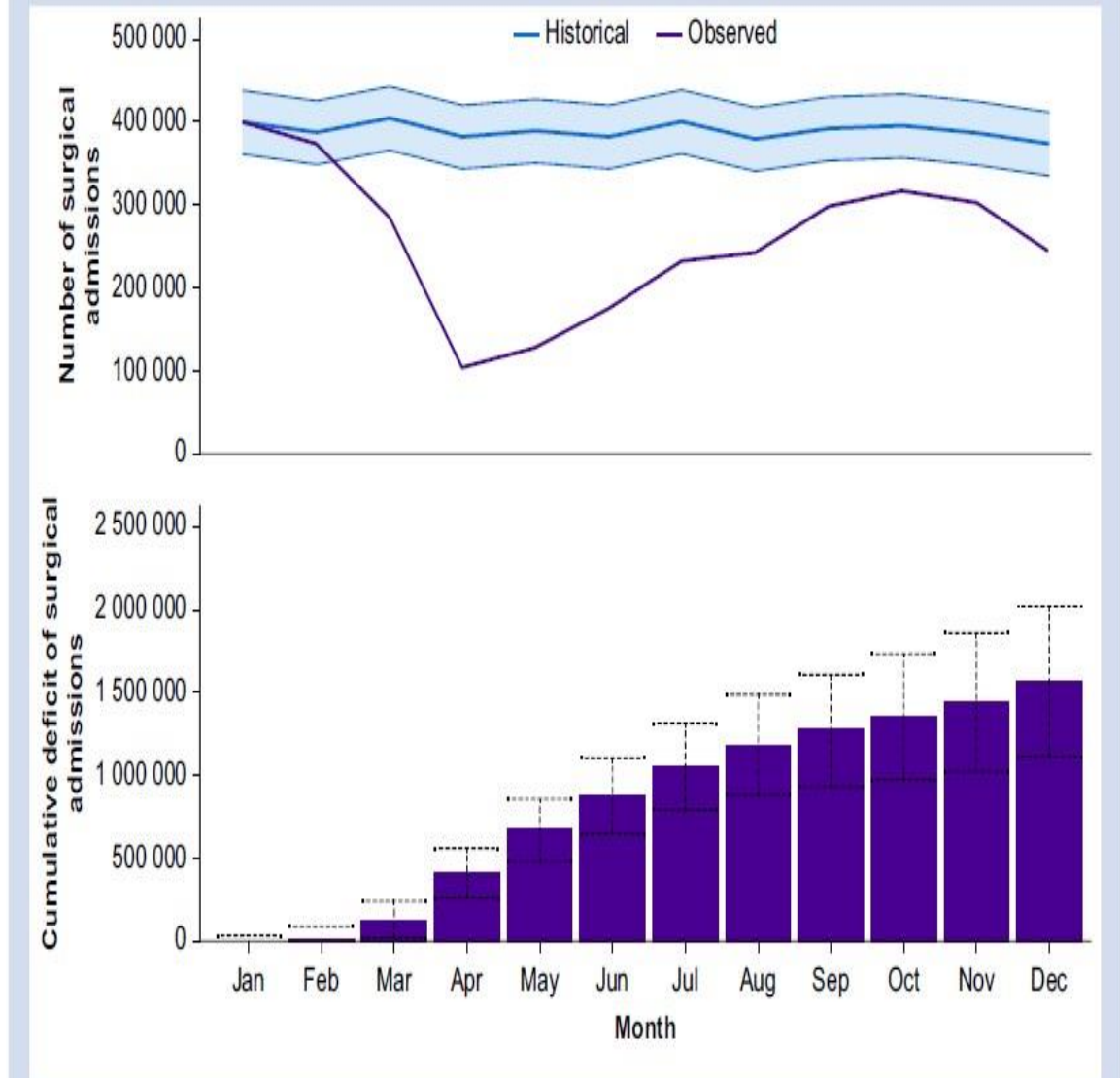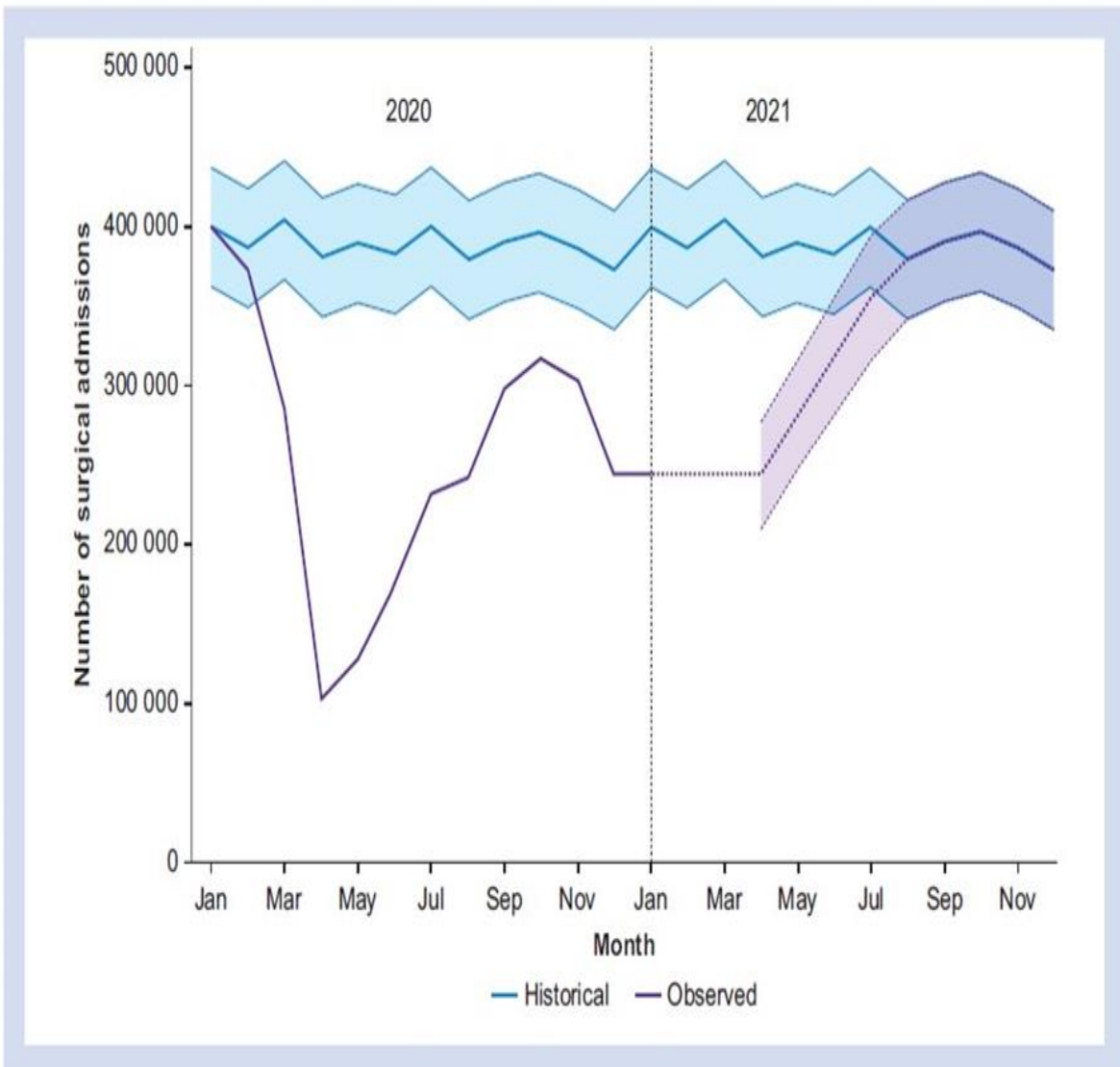
Source: Surgical activity in England and Wales during the COVID-19

pandemic: a nationwide observational cohort study

WHAT IS SMART SURGERY

Artificial intelligence in healthcare/surgery is defined as the use of computer (or machine-learning) algorithms and software to mimic human cognition in the analysis, presentation, and comprehension of complex medical and health care data
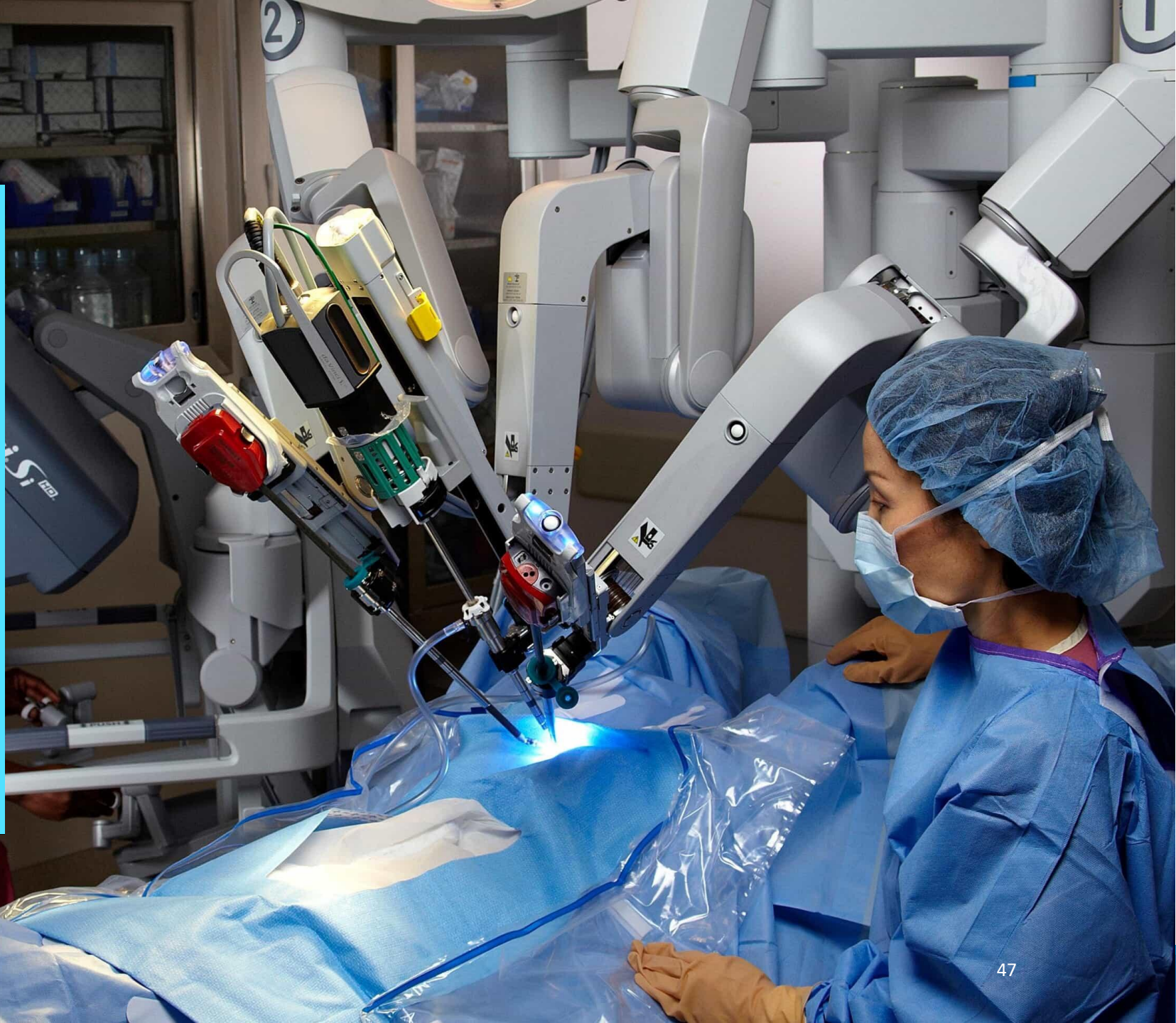
- AI does this through machine learning and deep learning

- Machine learning uses algorithms that have the capacity to learn and respond to big data sets, adjusting and improving their performance in response to feedback

- Deep learning constructs algorithms that can handle a high degree of complexity by mimicking the neural networks found in the human brain

- Artificial intelligence (AI) is gradually changing the practice of surgery with technological advancements in imaging, navigation, and robotic intervention

Artificial Intelligence
Machine Learning
Deep Learning
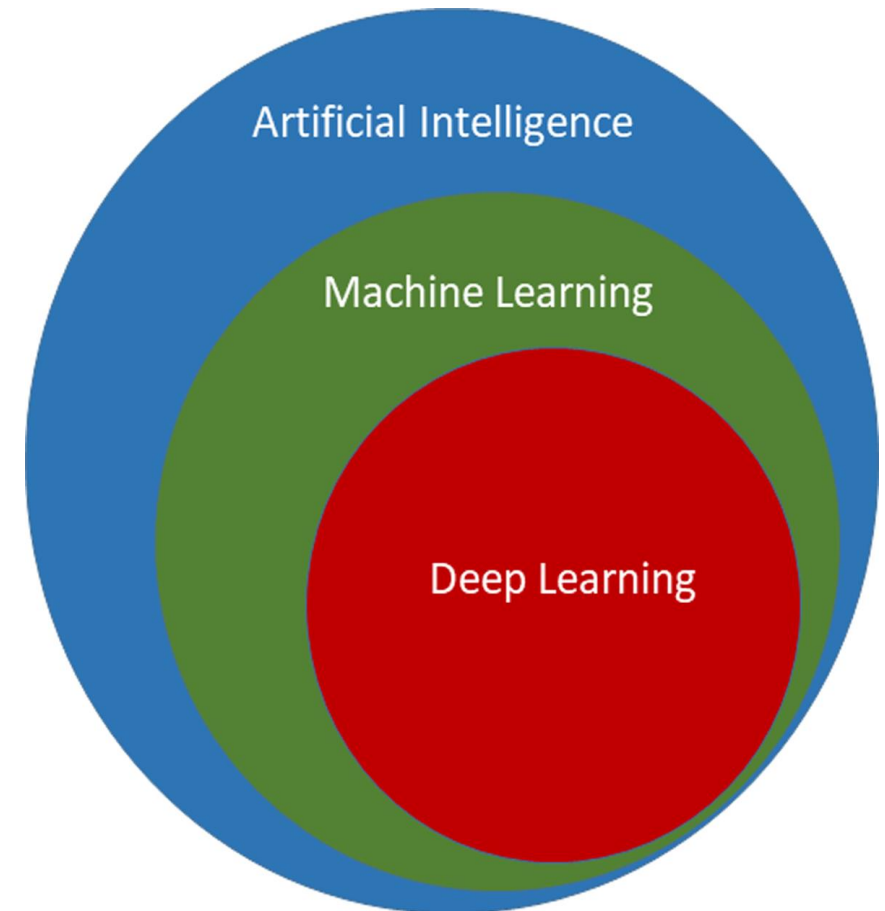
Source: Sevakula, R. K., Au-Yeung, W. T. M., Singh, J. P., Heist, E. K., Isselbacher, E. M., & Armoundas, A. A. (2020, February)

HISTORY OF AI IN SURGERY

1988: Transurethral resection performed by PROBOT (Imperial College London)

1993: AESOP (made by Computer Motion) telescope manipulator introduced

1997: First laparoscopy performed using a robotic system

2001: First transatlantic robot-assisted procedure (cholecystectomy)

2007-2008: Sensei & SpineAssist received FDA approval for intravascular and spinal procedures, respectively

2013: Over 500,000 surgical procedures performed worldwide with da Vinci

2019: Over 5,000 da Vinci surgical systems installed worldwide, 6 million surgeries globally

1985: First robotic surgery performed. PUMA 560 was used to obtain brain biopsy

1992: ROBODOC performed total hip arthroplasty

1995: Intuitive Surgical is founded

2000-2001: da Vinci (Intuitive Surgical) and ZEUS (Computer Motion) surgical systems approved by FDA

2003: Computer Motion and Intuitive Surgical merge into one company. ZEUS is discontinued

2012: 23,000 hip and knee procedures conducted with MAKO globally

2016, over half of prostatectomies and a third of hysterectomies are performed robotically in the USA.

Source: IDTechEx Report "Innovations in Robotic Surgery 2020-2030

TOTAL INTEGRATION OF SURGICAL CARE

Remote Surgery

Pre-operative planning
Surgical Rehearsal

Intra-operative navigation

Minimally Invasive
& Open Surgery

Simulation & Training
Pre-operative Warmup

- Total integration of surgical care means there is the integration of care into a single and coherent process within/or across the different aspects of surgery

- OR Integration connects technology, information and personnel throughout the hospital to create a purpose-built system that reduces the dependency on mobile equipment

- This assists seamless operative workflow

Source: Kataria, M., & Soner, S. (2014). *Robotic Surgery*. Slide share. Retrieved 2022, from
https://www.slideshare.net/montinokatriano/robotic-surgery-presentation

WHY ARE ALTERNATIVES SUCH AS AI REQUIRED

- To improve the backlog of surgeries due to the pandemic

- Demand for healthcare has changed significantly since the NHS was   formed. The NHS needs reform if it is to continue delivering good quality care. AI could be an enabler of these reforms

- Help empower doctors through additional expertise and assistance

- Help cover personnel and staff shortages

- Manage waiting times through automated scheduling

- Surgical demand in the UK is continuing to grow due to the increase in chronic disease and an ageing population

- Cancer is expected to increase by 2% by 2035

- Surgical demand in the UK is continuing to grow due to the increase in chronic disease and an ageing population

- Cancer is expected to increase by 2% by 2035

- Neurodegenerative diseases: More than 2 million people in the UK are projected to suffer from dementia by 2050

- Musculoskeletal disease: An estimated 17.8 million people of the total UK population live with a musculoskeletal condition. Particularly knee osteoarthritis

- Surgical interventions, such as coronary artery bypass and valve replacement, will continue to be necessary

- Disability will increase by 25%, reaching 2.8 million, reflecting an ageing population

ADVANTAGES

PRE-OPERATIVE

```
┌─────────────────┐      ┌─────────────────┐      ┌─────────────────┐
│    Efficient    │ ───▶ │     Better       │ ───▶ │    Improved     │
│  patient flow   │      │  scheduling of   │      │   efficiency    │
│                 │      │    surgeries     │      │                 │
└─────────────────┘      └─────────────────┘      └─────────────────┘

┌─────────────────┐      ┌─────────────────┐      ┌─────────────────┐
│ Configuration of│ ───▶ │ The use of robotic│ ───▶│  Standardization│
│   personalized  │      │  platforms may    │      │   of surgical   │
│surgical techniques│    │reduce variability │      │    outcomes     │
│                 │      │ of outcomes,      │      │                 │
│                 │      │through the analysis│     │                 │
│                 │      │ of data           │      │                 │
│                 │      │gathered during    │      │                 │
│                 │      │procedures, and    │      │                 │
│                 │      │further learning   │      │                 │
│                 │      │and refinement     │      │                 │
│                 │      │of surgical        │      │                 │
│                 │      │techniques         │      │                 │
└─────────────────┘      └─────────────────┘      └─────────────────┘
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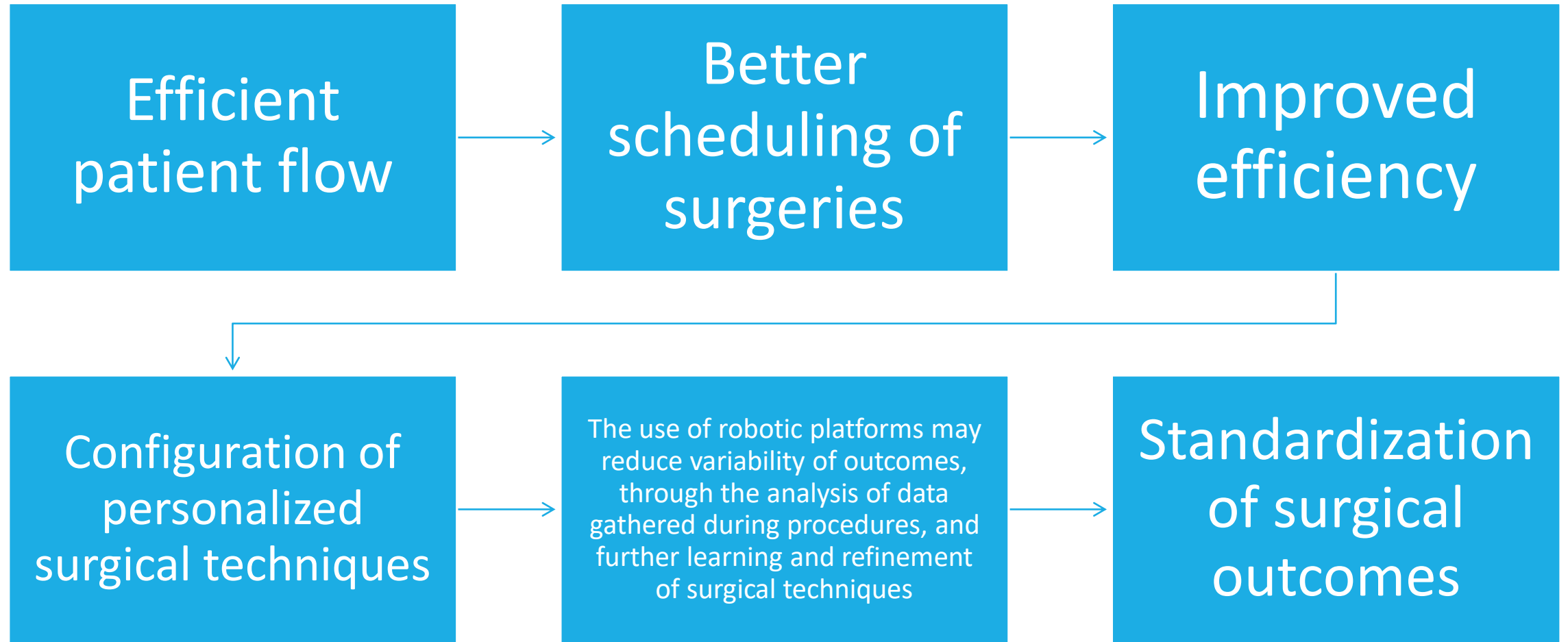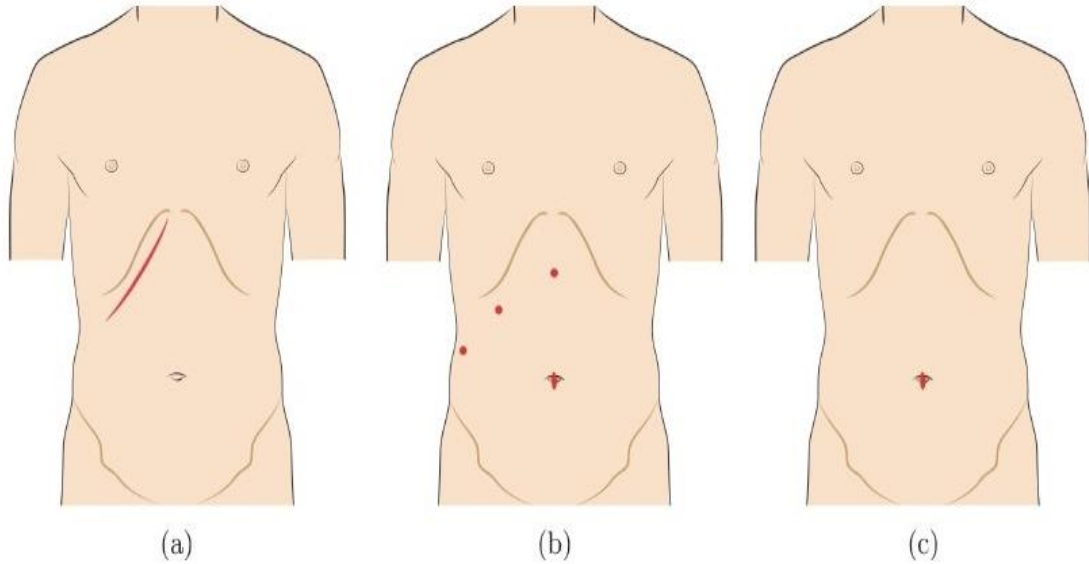
Figure 14. (a) Open surgery with 5–8 inches of incision, (b) multi-port laparoscopic surgery with 4 small incisions, and (c) single-site or single-port surgery with only one incision.

Easier management of complex procedures

robots can analyze data from pre-op medical records to guide a surgeon's instrument during surgery, which can lead to a 21% reduction in a patient's hospital stay.

Minimally invasive surgery

Robot-assisted surgery is "minimally invasive" so patients won't need to heal from large incisions.

- ## More precise view

Provides 10 times magnification, 3D, high-definition vision 360-degree articulation, and 7 degrees of freedom, it allows us to do things that we couldn't do even with open surgery sometimes

- ## Less error

It has been estimated that only 25% of the important events that occur during a surgical procedure are related to manual or technical skills and that 75% relate to human factors. An NHS study found that AI-assisted robotic procedure resulted in five times fewer complications compared to surgeons operating alone

- ## Increased patient safety

New robotic systems may use AI mechanisms and on-screen checklists to minimize surgical errors. Robotic systems will enable greater remote support from specialists

PERI-OPERATIVE

Easier to attach nerve endings

Less physically strenuous for surgeons

Fewer staff required in the operating room. Which is more cost effective for hospitals

Reduced risk of infection

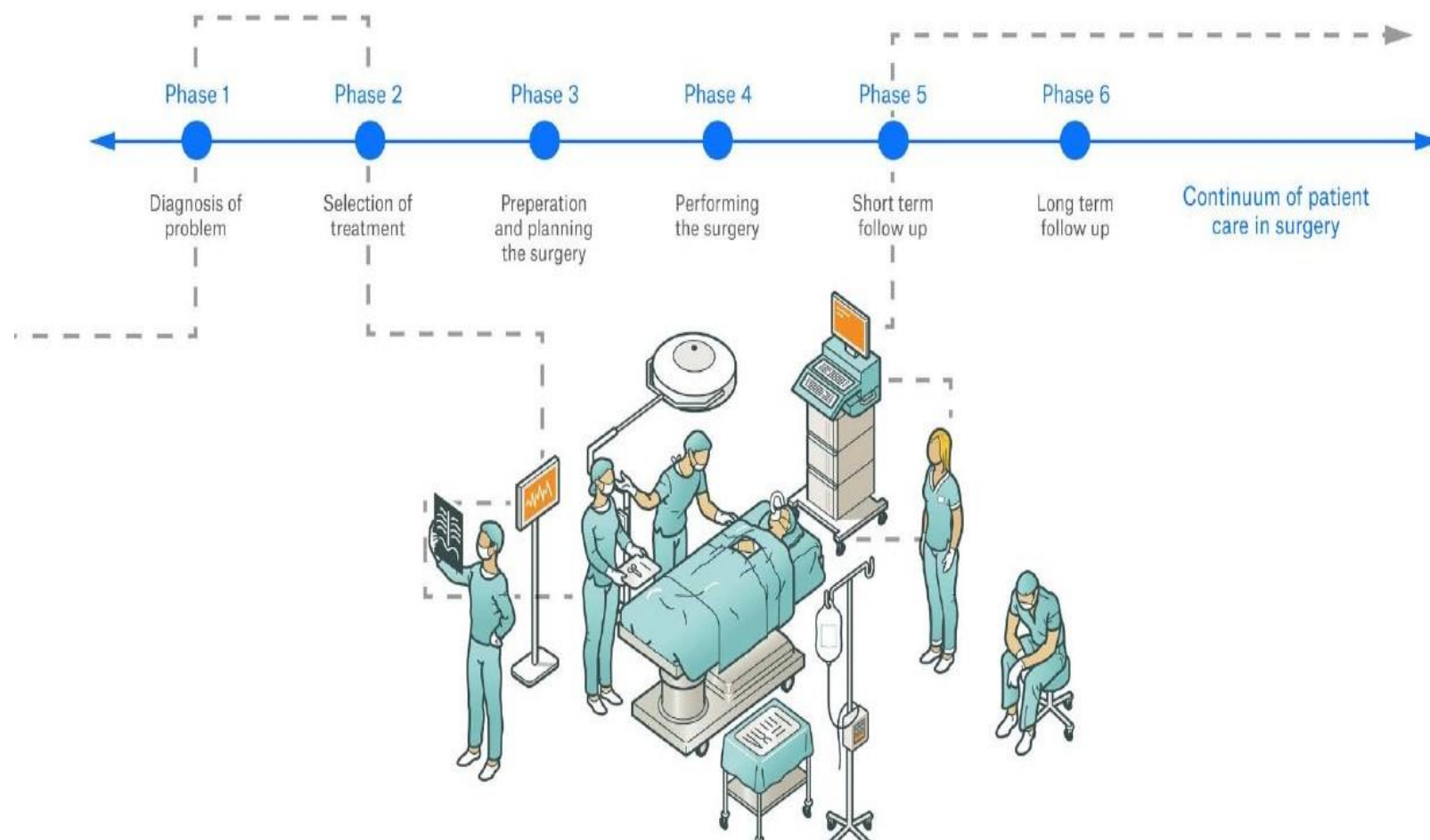Lower dose of anesthesia is required

Lesser percentage of blood loss

Automated analysis of all preoperative mobile and clinical data:

In this continuum there is the opportunity to improve clinician decision making through provision of novel information at the point at which it is most needed

In some cases, the information already exists through preoperative diagnosis and surgical planning but needs to be made easily available during surgery

In other cases, data needs to be both collected and displayed during surgery

Phase 1 — Diagnosis of problem
Phase 2 — Selection of treatment
Phase 3 — Preperation and planning the surgery
Phase 4 — Performing the surgery
Phase 5 — Short term follow up
Phase 6 — Long term follow up
Continuum of patient care in surgery

Source: Morgan, R. (2017, April 4)

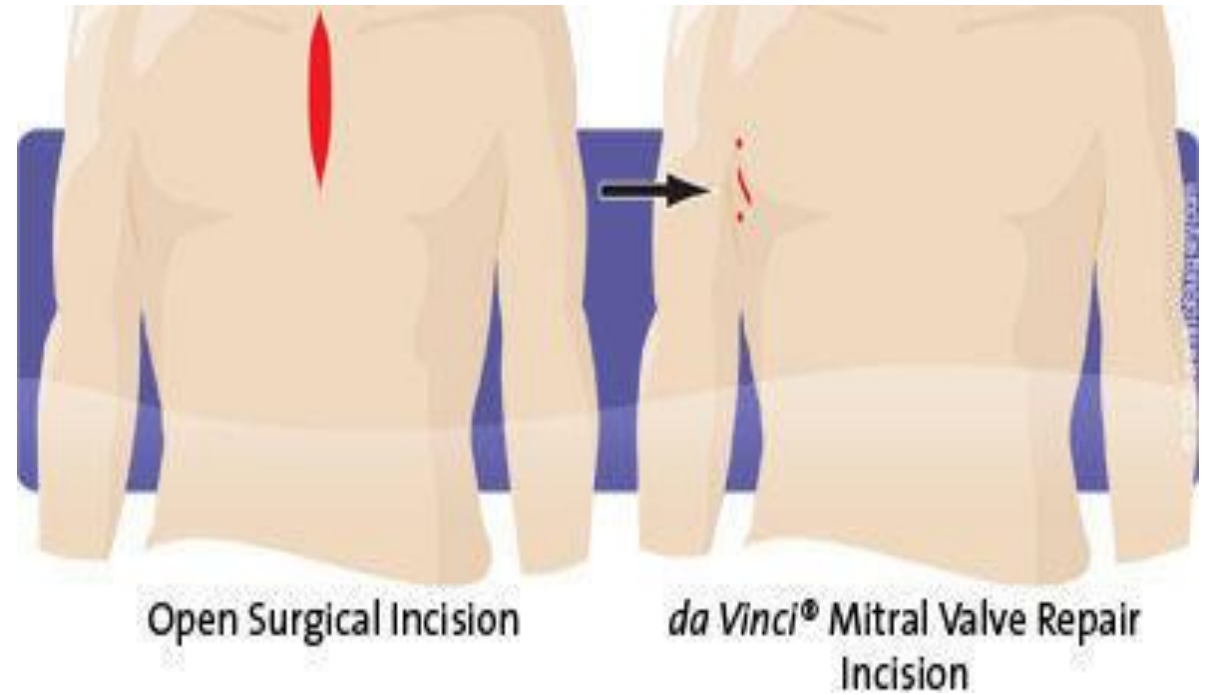# POST-OPERATIVE

Reduced post-operative pain

Shorter catheter time. 5 vs 14 days

Immediate urinary control

Reduced recovery time and hospital stay

Faster rate of back to normal physical activity (1-2 weeks)

Minimal scarring

Cardiac Surgery

Robotic surgery   Open surgery

Open Surgical Incision   da Vinci® Mitral Valve Repair Incision

Source: University Hospital, R. W. J. (2021).

SUMMARY OF THE ADVANTAGES OF AI
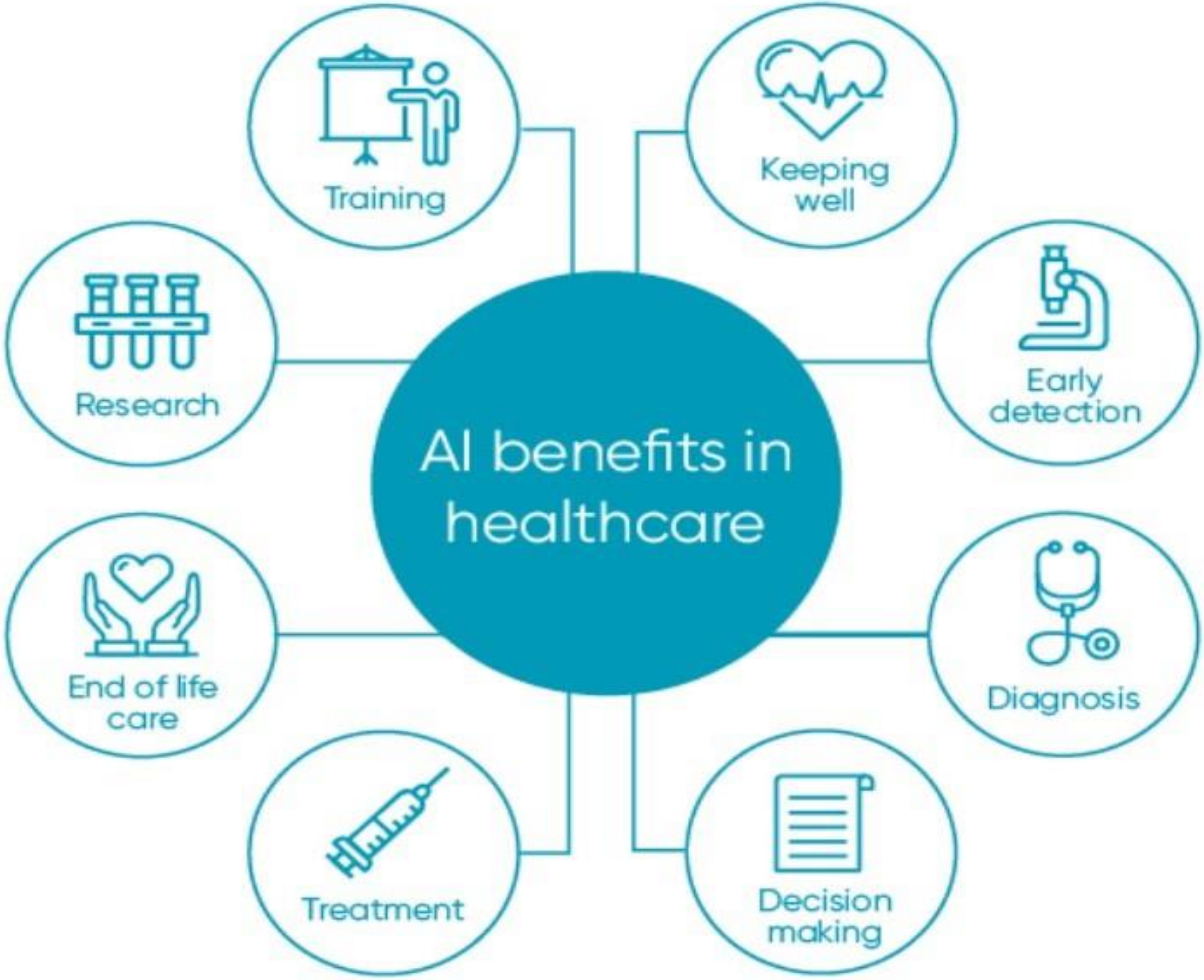
Source: Willink, S. (2021)

INTEGRATION OF AI IN NHS SURGERY

NHS AI Lab in collaboration with the Accelerated Access Collaborative (AAC)

Robot Assisted Surgery: Robotic surgery is a type of minimally invasive surgery. "Minimally invasive" means that instead of operating on patients through large incisions, we use miniaturized surgical instruments that fit through a series of quarter-inch incisions.
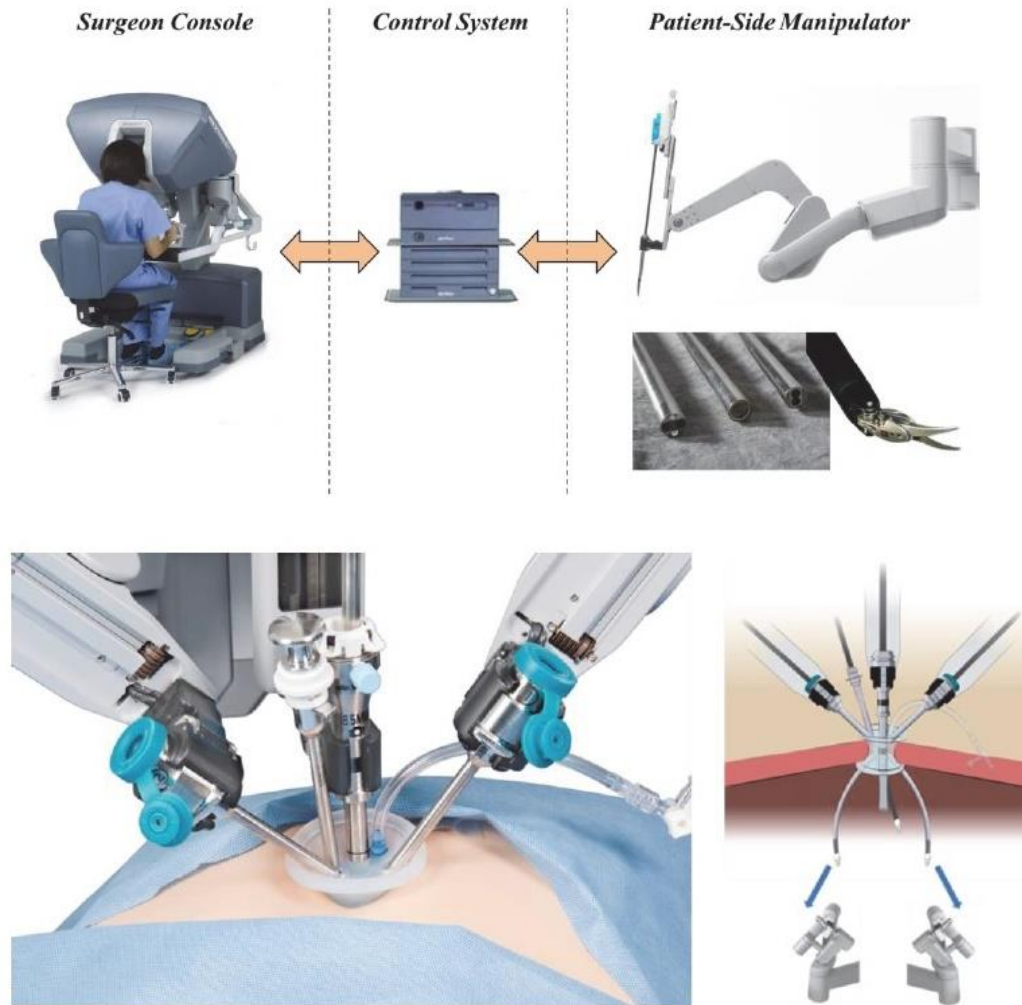
Use of Da Vinci robots and Versius robots

So far, nearly 17,000 people have been treated and industry evidence shows it is reducing treatment time by 50%

AN EXAMPLE OF AN AI INTEGRATED OR AT THE GOLDEN JUBILEE HOSPITAL IN CLYDEBANK

DA VINCI ROBOT
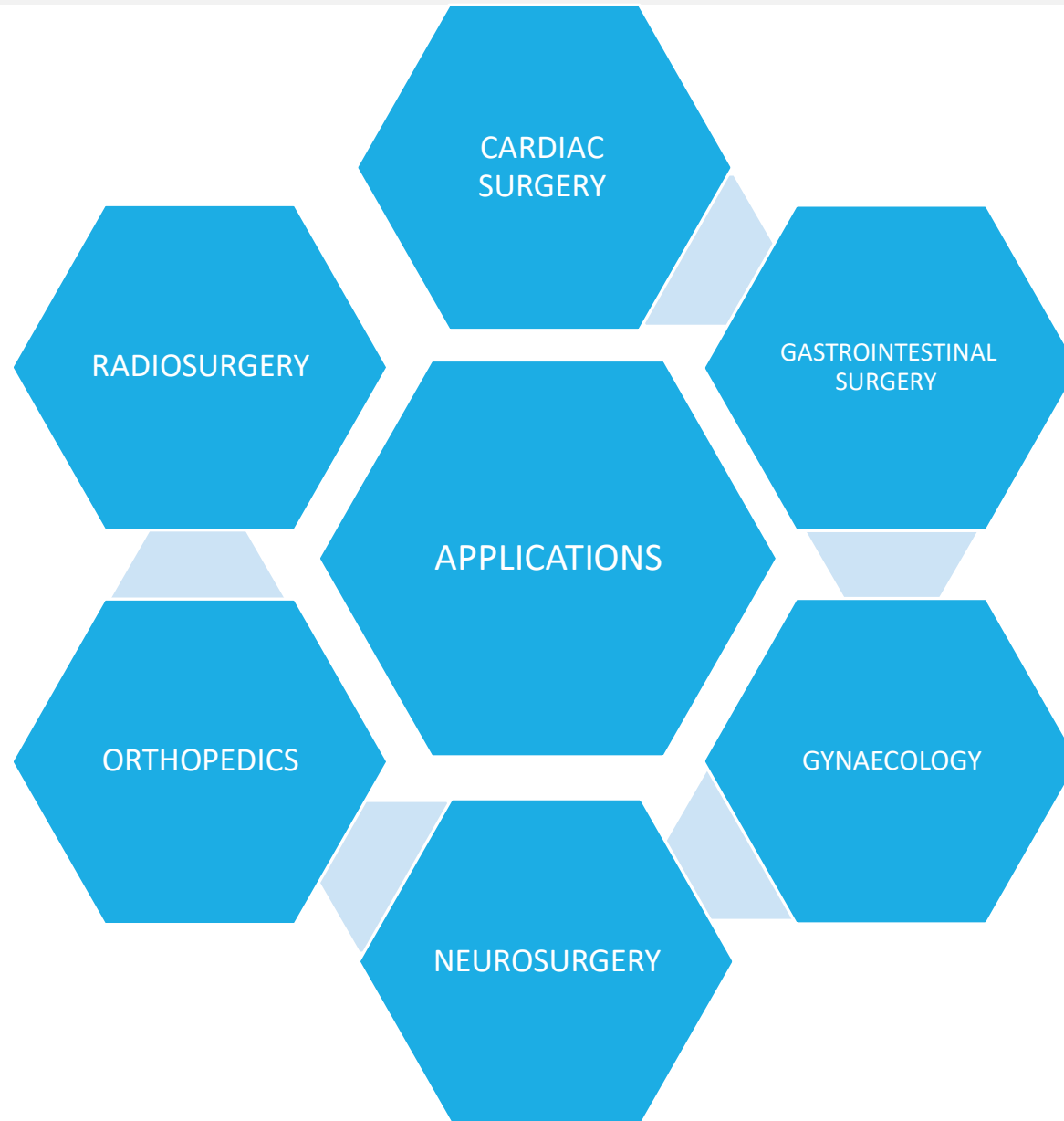

Surgeon Console | Control System | Patient-Side Manipulator

A surgical console
Patient-side cart
Instruments and imaging
processing equipment
Surgeon's Console
• Optimal hand-eye
alignment
• Immersive 3D stereo
viewer
• Comfortable seat
posture – ergonomic
• Motion scaling &
tremor reduction

Da Vinci robots have been operating in the UK
since 2001 and there are now more than 4,500
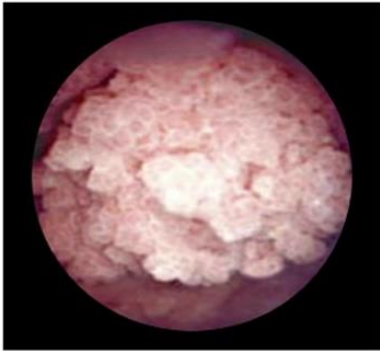worldwide

VERSIUS ROBOT
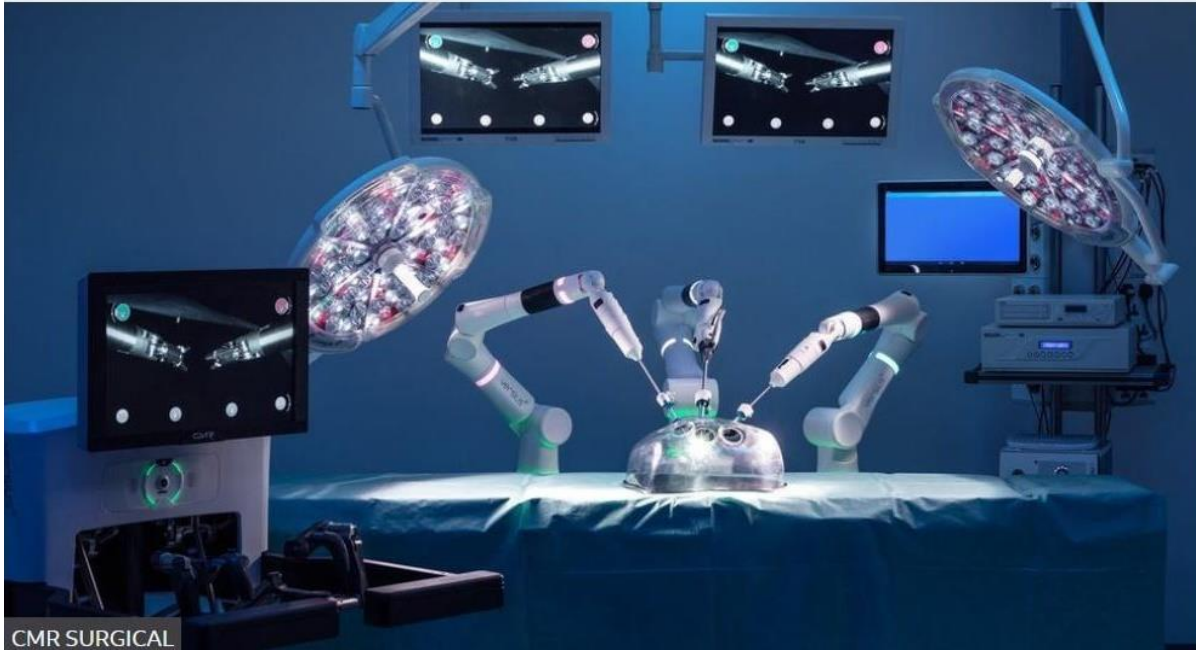
- The Versius robot, designed and built in Cambridge, is used in more than 70 hospitals in the UK

- The first NHS hospital to use Versius was The Western General Hospital in Edinburgh, followed by Milton Keynes University Hospital NHS Trust

- Versius has initially been used to perform a range of colorectal surgeries

- It is smaller and portable allowing it to be easily moved to different sites within and between hospitals

- Once in theatre, it can take, on average, 15 minutes to set up the system

- It has the potential to perform up to 700 MAS procedures each year, which otherwise may have been performed by open surgery.
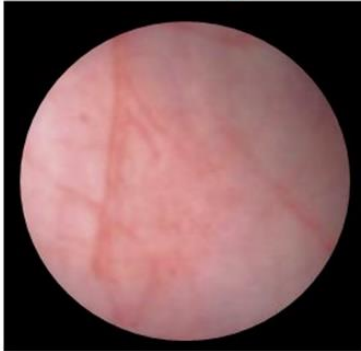
CARDIAC SURGERY

GASTROINTESTINAL SURGERY

RADIOSURGERY

APPLICATIONS

ORTHOPEDICS

GYNAECOLOGY

NEUROSURGERY

Bladder cancer tumor images using white light and blue light with a contrast agent
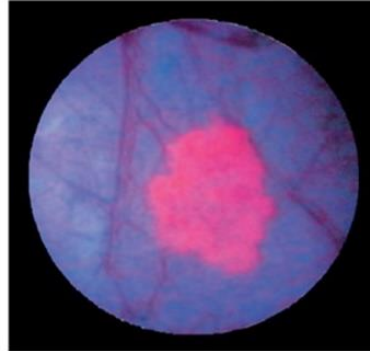
| White Light	White Light	Blue Light
Tumors above bladder wall are visible	Flat tumors and margins not visible	Makes flat tumors and margins visible

Source: Medical , I. (2021, August 20)

Tumor tissue visualization

- To enhance intraoperative visualization of tumor tissue

- To enhance cancer diagnosis and resection

- For example, in the NHS it is used to assists resection in the treatment of bladder cancer; specifically non-muscle invasive papillary bladder cancer (NMIBC).

- It is known as AI cystoscopy. It uses blue light cystoscopy uses blue light instead of the conventional white. As you can see in the image, the tumor margins are clearly defined

# Tissue characterization

System of AI diagnosis in endoscopic videos and representative images of esophageal squamous cell carcinoma
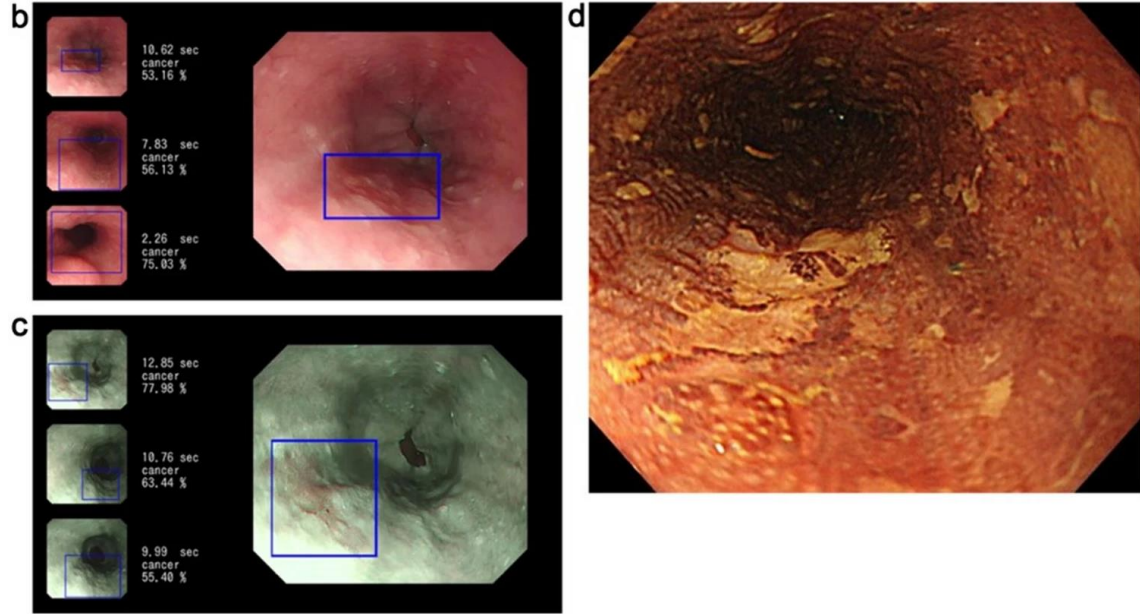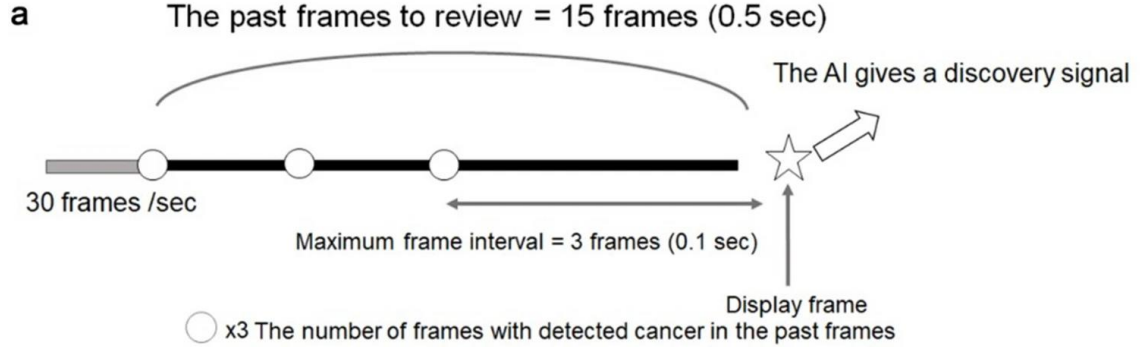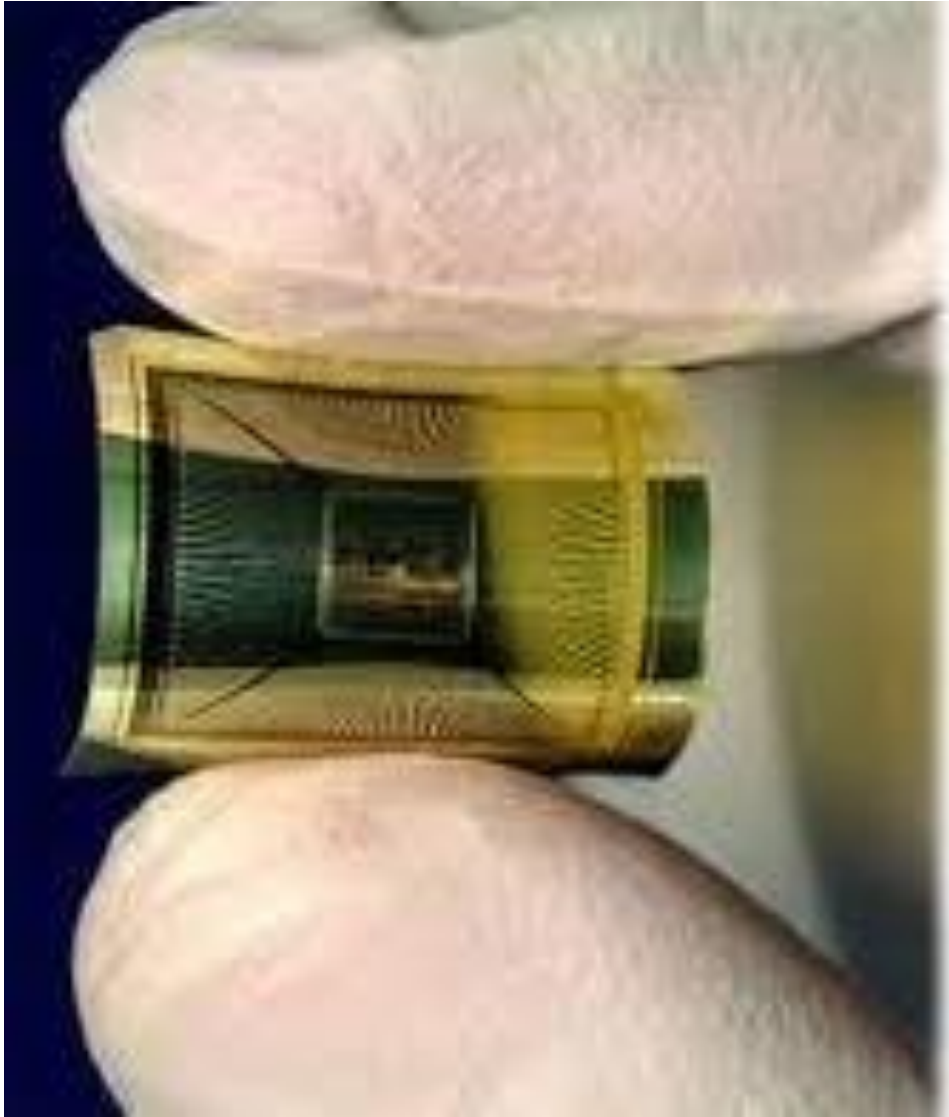

Source: Shiroma et al, 2021

Image guided resection

The combination of a fluorescence imaging agent and a multispectral fluorescence camera has enabled image-guided excision of extremely small tumors in ovarian cancer surgery
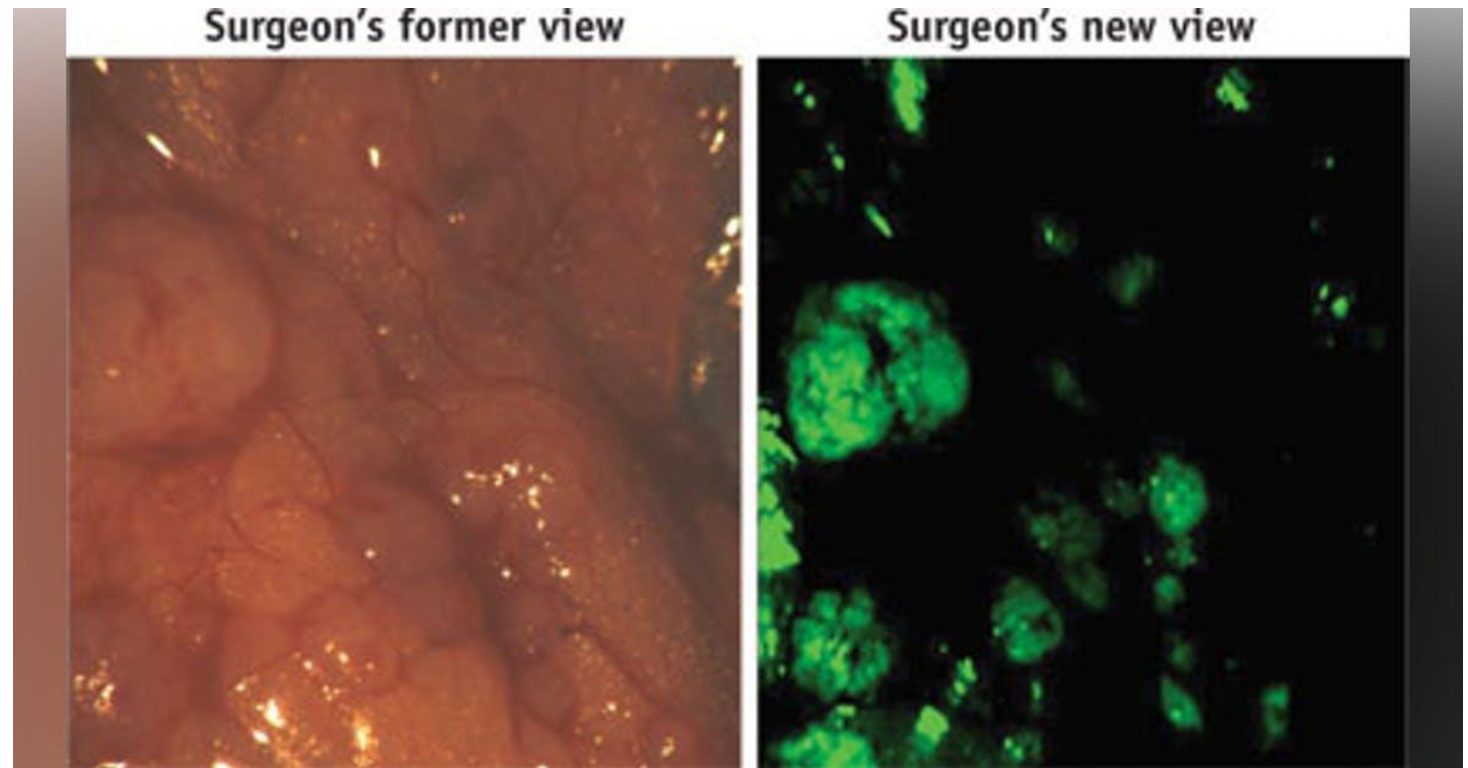
Source: World, L. F. (2011).

Implant positioning

- Robotic orthopedic procedures for patients requiring joint replacements, such as total and partial knee or hip replacements, by utilizing the Mako Robotic-Arm Assisted system.

- It involves the implantation of a joint replacement smart chip:

- This minimizes the need for revision surgery

- A smart implant could be used to monitor the progression of this process and inform the surgeon when the implant is starting to loosen.

GoSurgery

- Every minute in the theatre per surgery is estimated to cost the NHS £20.117

- GoSurgery, uses AI to ensure that the right surgical process information is displayed to the right surgical team member, at the right time, during the procedure

qER

Evaluation of the use of AI to support emergency department clinicians to analyze CT scans. Jubilee example: In this case, they are removing the patient's thymus gland from between the lungs.

Moorfields Eye Hospital

- AI cataract surgery technology to help train surgeons, improve theatre flow, develop surgical teams and help analyze and reduce risks of cataract surgery

First PLUS

- AI to analyze the size of the placenta during the first trimester, and flag those that are abnormally small, which is an indicator for Fetal Growth Restriction.

- This is a risk factor for stillbirth and other neonatal conditions

Smart glasses

- in both surgery and cardiology, the surgeon works with the patient, but is looking away, in some cases at a whole wall of monitors

- NHS Highland has developed an AI solution as a wearable computer that adds information to what the user can see by projecting an image onto the screen. They have a high-resolution camera as well as voice recognition software which turns speech into text

**Source: McBeth, R. (2017, January 25)**

Source: Lovell, T. (2021, September 30).

- Leeds Teaching Hospital uses 3D model to allow surgeons to rehearse brain aneurysm procedures by predicting stents

- The BHF-Turing Cardiovascular Data Science Awards

 Machine learning for risk prediction in adult cardiac surgery in United Kingdom. Which will in turn assist in surgical decisions

- HoloLens augmented reality headset

Allows surgeons to easily access digital images of patient data

 It also provides surgeons with the opportunity to learn, rehearse and practice surgical procedures within a safe and controllable space. Example: orthopedic procedures

Source: Azizian, M., Surgical, I., Liu, M., Khalaji, I., & DiMaio, S. (2022).
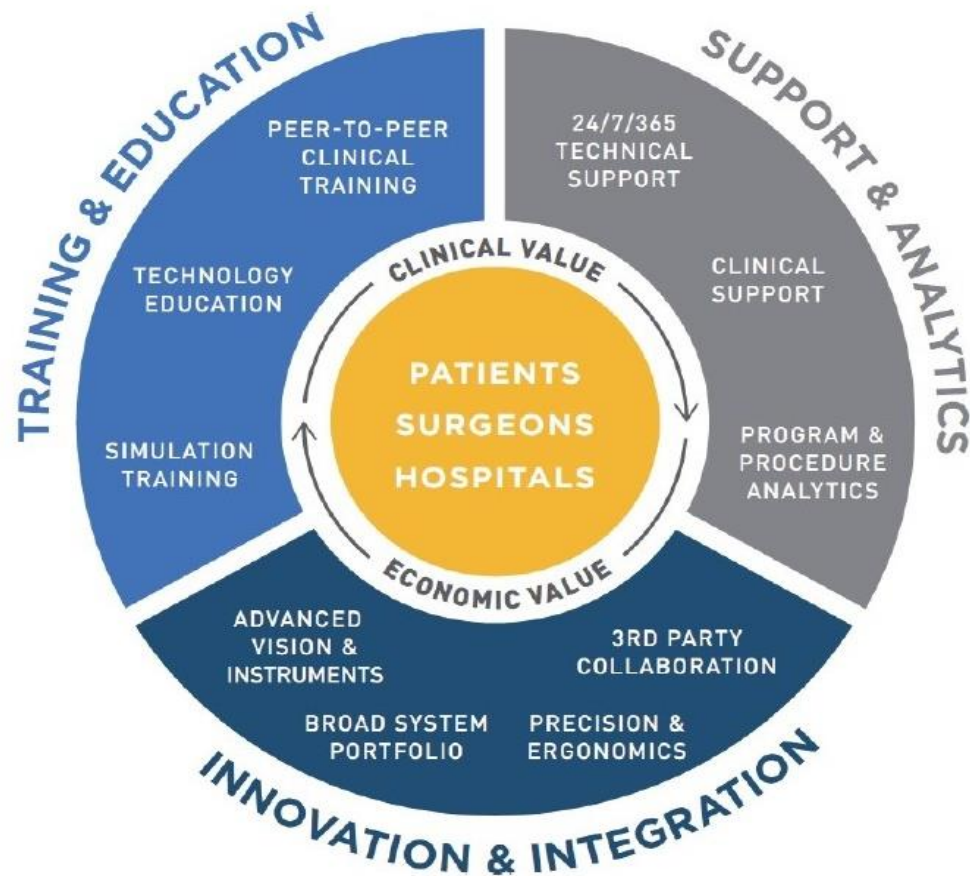
We can summarize the integration of AI in the NHS in three main domains. Innovation, support and analytics and training and education

LIMITATIONS OF AI

- **High cost**

  Purchasing of the robotic system, maintenance and the disposable instruments required for each procedure

  costs include those of training, technical support, insurance and potential litigation

  commentators quantify the learning curve as up to 200 robot-assisted procedures before achieving the best outcomes

  current robots are cumbersome and heavy, resulting in their lack of mobility and reduced availability around the country and in remote areas

- **Training**

  The current state of the National Health Service (NHS) with the financial burden and cost cutting efficiency measures makes it almost impossible to introduce this technology training in the near future.

- **Insufficient evidence of the effectiveness of robot-assisted surgery**

  there are questions around what level of error the NHS is willing to accept in the diagnosis of conditions and working out who should be held responsible in the event an AI misdiagnoses a patient.

  issues around data privacy and patient trust

CONCLUSION

- The use of artificial intelligence n surgery has applicability to pre-operative planning, peri-operative guidance imaging and navigation during surgery improved post-operative outcomes

- To fully harness the benefits of AI technologies within safe and ethical boundaries, a call to action within the NHS to speed up the development, deployment and use of AI in surgery can help deploy the benefits to more people - patients and staff alike - more quickly

THANK YOU

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Prathima Gogineni, Clinical fellow, Leicester General Hospital

SOMETHING OLD FOR SOMETHING NEW

Dr Prathima Gogineni
SHO, General surgery

Innovation?

- Innovation itself is not a new concept. However, Innovation in medicine means '**new or improved' health policies, practices, systems, products and technologies, services, and delivery methods that result in improved healthcare**.

- WE AIM TO USE SOMETHING OLD TO CREATE SOMETHING NEW, A BETTER VERSION THAT COULD HAVE A SIGNIFICANT IMPACT ON OUR PATIENTS.

ACUTE APPENDICITIS

History taking

Clinical examination : signs

Lab Investigation

Investigation: scans

Aim

- Our AIM for today is to assess whether the clinicians use detailed history to diagnose appendicitis or rely too much on the imaging modalities.
- To evaluate how effectively are we using the investigations that are being done

Observation

- Over the course of time, there has been a decrease in clinical acumen in diagnosing appendicitis

- Appendicitis has always been more of clinical diagnosis, but in recent times more and more doctors have started to rely on imaging such as US and CT scan to reduce the amount of unnecessary surgery being done on the patients.

- This has led to decrease in clinical diagnosis of appendicitis by the use of ALVARADO scoring.

Objectives

❖ALVARADO Score: Interpretation and review

- Triage tool for ruling out appendicitis and identifying those at higher risk who would benefit at most from an admission to a hospital.

- Simplified tool to stratify patients for referral for surgical consultation

❖Consider what imaging to be done next.

QUALITIES OF AN EFFECTIVE SCORING SCALE

- It should be simple
- It should be capable of being administered by all strata of medical personnel
- It should be possible to assess quickly
- There should be no ambiguity

Alvarado Score

		Score
Symptoms	Migratory RF Pain	1
	Anorexia	1
	Nausea and Vomiting	1
Signs	Tenderness (RIF)	2
	Rebound tenderness	1
	Elevated temperature	1
Laboratory	Leukocytosis	2
	Shift to left	1
Total		10

INTERPRETATION OF ALVARADO SCORE

- Scores < 5 – can rule out (unlikely to be appendicitis)
- Scores > 6-7 – can rule in (can be appendicitis)
- Scores > 8 – most likely to be appendicitis

Symptoms Recording- Stats

Stats on how many doctors used the scoring systems and recorded them

❖ Symptoms

- Migratory pain

- Anorexia

- Nausea- vomiting

Recording Stats

Legend: Recorded ■ Not Recorded

Migratory Pain
Anorexia
Nausea and Vomiting

0%   25%   50%   75%   100%
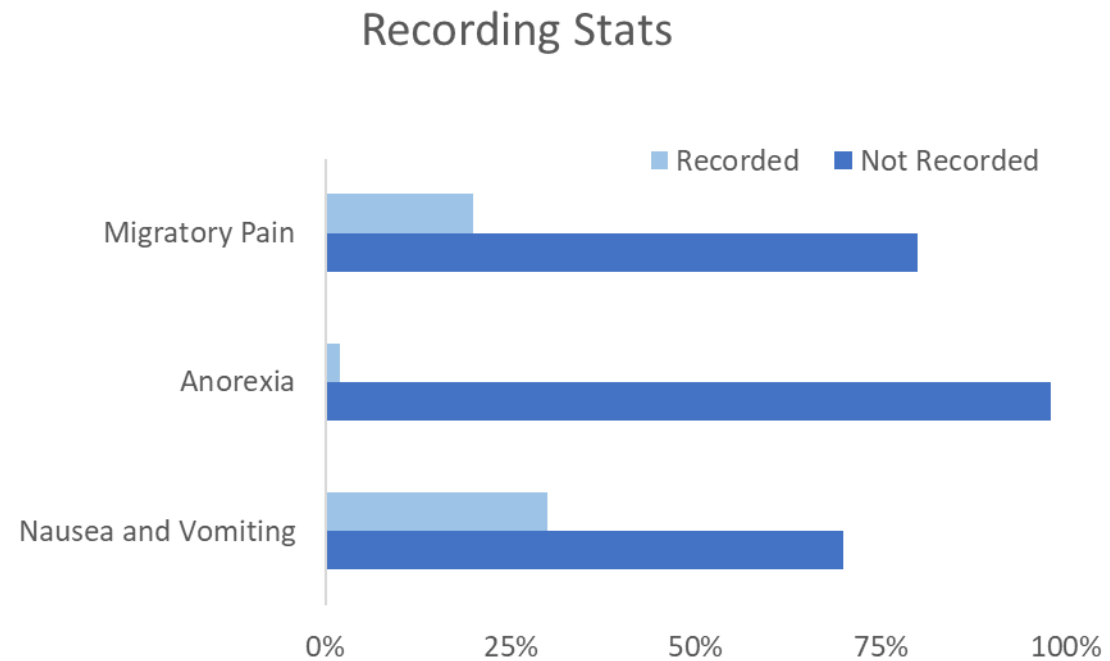
Graph Interpretations

- From the illustration, it is evident that migratory pain was not recorded in more than 75% of the patients.

- Anorexia was not recorded in the history of any patients.

- The complaints of Nausea and Vomiting were recorded by just over 25% doctors.

- **The non recorded data can have significant value like in this case. Failure to take complete history and lead to missed diagnosis.**

Signs observed- Patient Data

Percentage of signs observed vs not observed

- Tenderness in RIF
- Rebound tenderness
- Elevated temperature
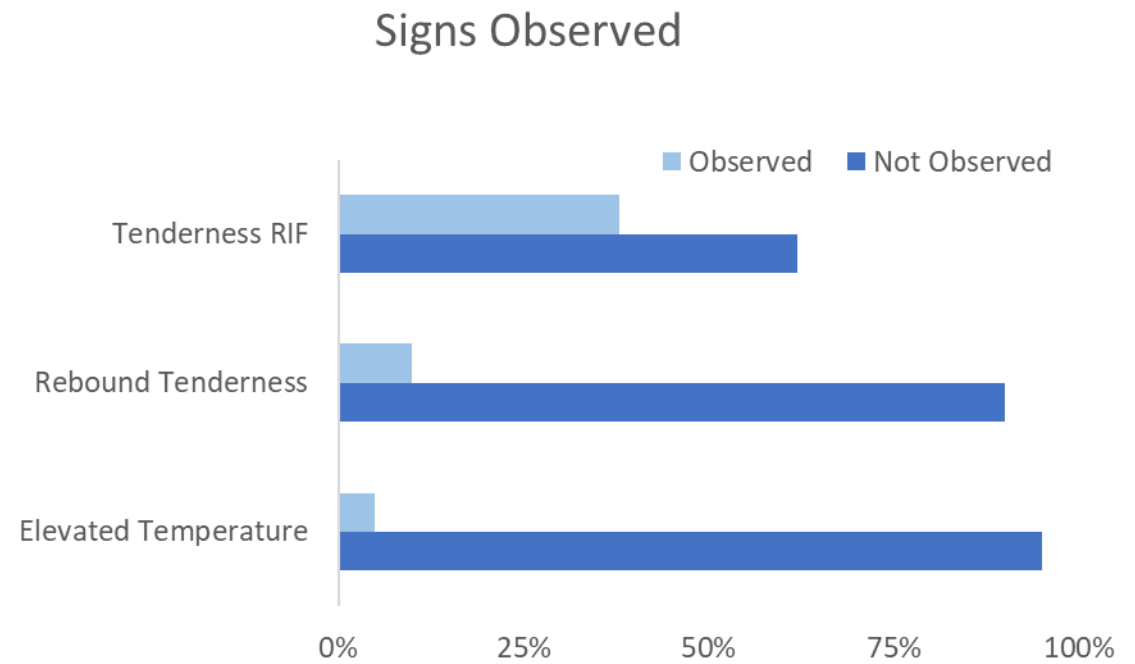
Signs Observed

Graph Interpretations

- From the previous slide, it is observed that, in about 80% patients, rebound tenderness was not elicited

- Most of the patients showed no rise in temperature on their charts through out their admission.

- About 40% patients had Right Iliac Fossa Tenderness.

Laboratory Data

Patient stats

- Elevated leukocytosis

- Shift to the left

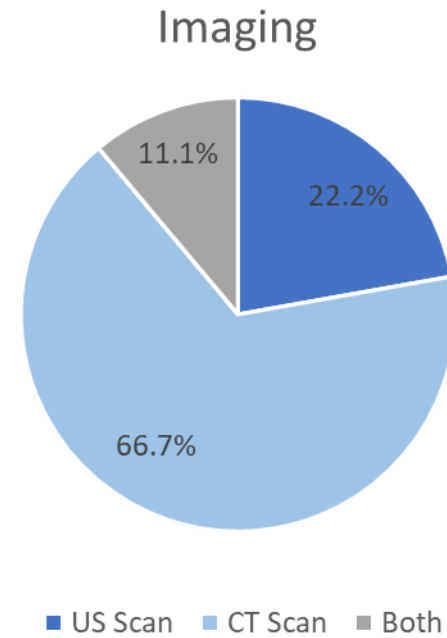- Around 75% patients had both elevated leukocytosis and shift to the left.

Laboratory data
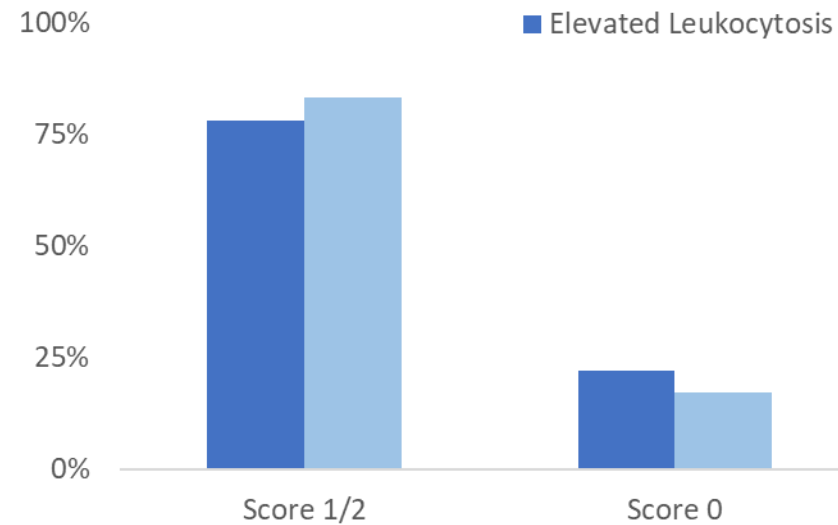
Imaging Stats

Use of Imaging

- US Scan

- CT Scan

- BOTH- US + CT scan

Imaging

22.2%

11.1%

66.7%

■ US Scan   ■ CT Scan   ■ Both

Imaging- Patient Data

- All 30 patients had a CT scan, where as ultrasound was done merely for 10 patients.

- 5 patients underwent both the imaging modalities, because of non visualisation of the appendix.

- Most of the patients who came to the surgical triage had already a CT scan prior to entering

CT SCAN DIAGNOSTIC CRITERIA

- CT is highly sensitive (94-98%) and specific (up to 97%) for the diagnosis of acute appendicitis and allows for alternative causes of abdominal pain also to be diagnosed.

- CT findings include:

- appendiceal dilatation (>6 mm diameter)

- wall thickening (>3 mm) and enhancement

- Thickening of the caecal apex: caecal bar sign, arrowhead sign

- Periappendiceal inflammation

- Focal wall non-enhancement representing necrosis (gangrenous appendicitis) and a precursor to perforation

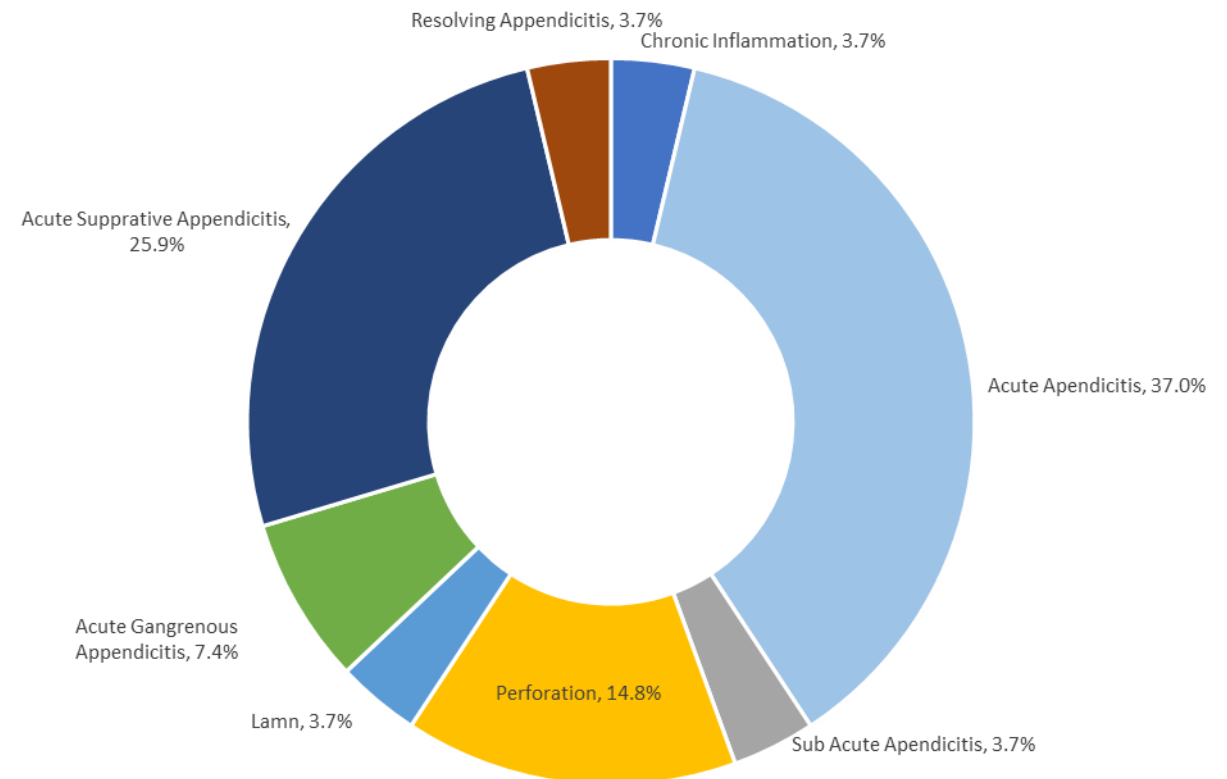# Appendix Diameter Data

CT SCAN: APPENDIX DIAMETER

From the illustration, we can see that approximately in around 15 patients the diameter was not recorded in the CT scan.

Count of APPENDIX DIAMETER
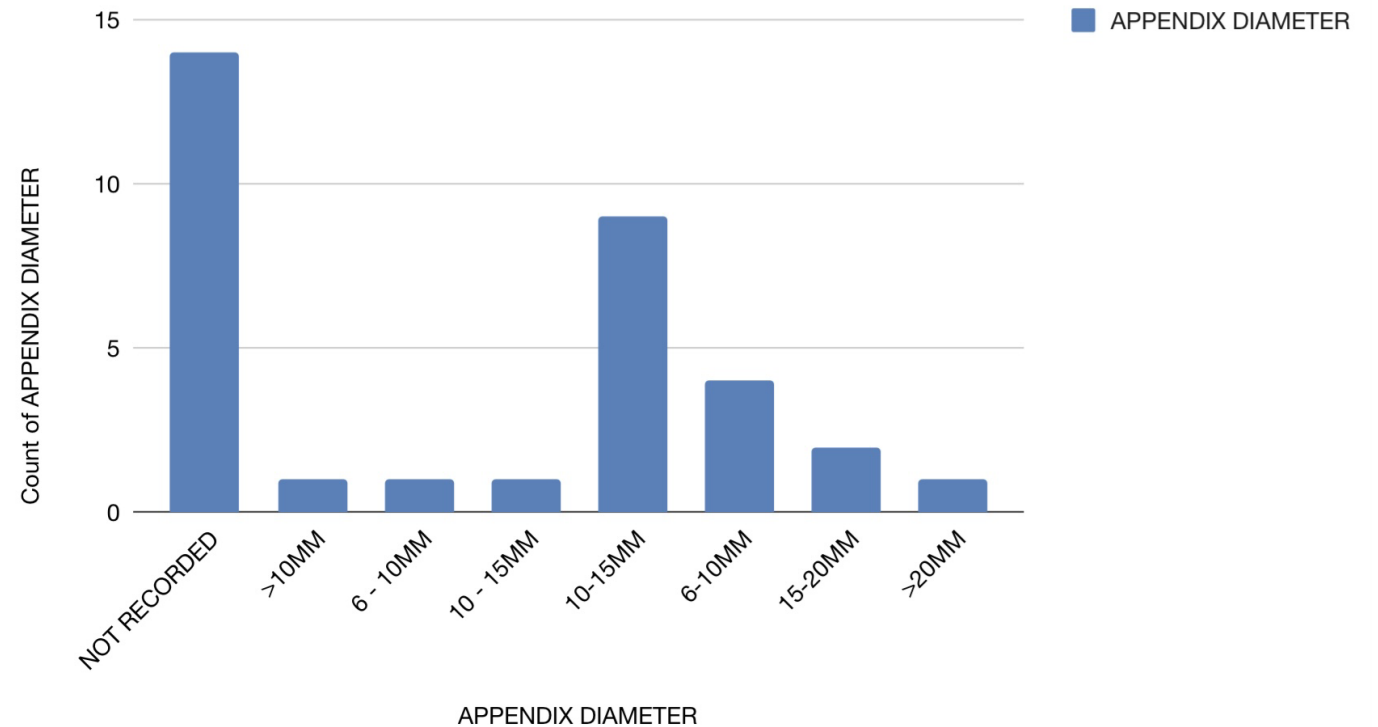
Specimen reports

- 100% of the reports came out to be positive in terms of pathology.

- The specimens collected showed a varying degree of pathologies ranging from sub-acute appendicitis to Low Grade Appendiceal Mucinous Neoplasm.

Resolving Appendicitis, 3.7%

Chronic Inflammation, 3.7%

Acute Supprative Appendicitis, 25.9%

Acute Apendicitis, 37.0%

Acute Gangrenous Appendicitis, 7.4%

Lamn, 3.7%

Perforation, 14.8%

Sub Acute Apendicitis, 3.7%

Conclusion

- Proper history taking and clinical examination is very significant for effective health care.

- Using our clinical knowledge and following proper protocols will avoid unnecessary investigations.

- Unnecessary investigations are not only a waste of NHS resources but can also lead to unnecessary radiation exposure to the patients.

Recommendations

- Proper Addition of scoring system whenever possible in history taking helps us take proper history.

- It is important to note that the heavy patient load in A&E and triage is the main reason why we skip taking proper history and go directly to high end scans like CT instead of USS. However, we should try to improve our daily practice to optimise healthcare services.

- Follow a basic protocol for patient safety and prevent unnecessary investigations.

thank you

Dr David Laith Rawaf,

Research & Design (WHO Collaborating Centre for Public Health Education & Training, Imperial College) London Surgical Trainee (Epsom & St Helier Hospitals, London Deanery)

Healthcare Workforce Retention

David L Rawaf

A bit about me

5th July 1948
- Aneurin Bevan - (Clement Attlee)
- "Unified Medical Service"
- Now employs 1.4m FTE

"It will last as long as there are folk left with the faith to fight for it"

The current climate

- No national NHS workforce strategy since 2003
  - NHS Long Term Plan focused recognized need only
- Travel / visa restrictions on overseas workers
- Increased costs of UK study
  - Nursing bursaries; reduced numbers
- Sickness (COVID etc)
  - 125k isolating / sick in December '21
- Chronic excessive workload / Burnout / intention to leave
  - 38k nursing vacancies; poor workplace cultures; work/life balance
  - October '21: **1 in 5** actively planning to leave and **2 in 5** thinking of leaving

Problems

- NHS: Shortage of 100k FTE (1 in 11)
  - Unfilled posts place pressure on remaining staff
  - Unattractive rota's
  - Bank/agency cover = cost + lack of continuity
- Bottlenecks during training
- Reduced numbers of applicants (nursing)
- Vilification in the press
- "Grass is Greener"
- Gender pay gap. Work-place sexism. Institutional Racism.

Solutions
Short vs long term

"*Employees need to feel as though they are thriving, personally and professionally, in the workplace, if they are to be retained*"

Workforce: recruitment, training and retention in health and social care, *Association of British Neurologists, Jan 2022*

£30m DHSC funding

- Focus on "identity"
- Flexible job plans
- Ability to take TOOT
  - Streamline process
- Reduce Foundation length
  - Final year = F1 (IMG best practice
- Increase training & medical school numbers
- Improve salaries / AL
- HR support / well-being / MH
- Active & constructive feedback
- Workforce optimisation

LTFT

- More seeking LTFT numbers
    - Will exacerbate staffing issues if numbers are not expanded
- Widen accepted reasons
- Supporting flexible training (in / out)
- Enhancing wellbeing
- Encourage further education
- Courses / training blocks to gain competencies
- Simulation training
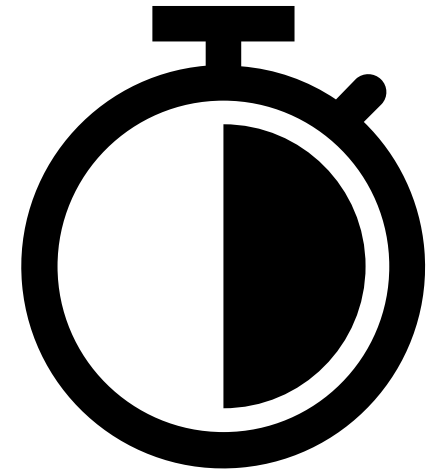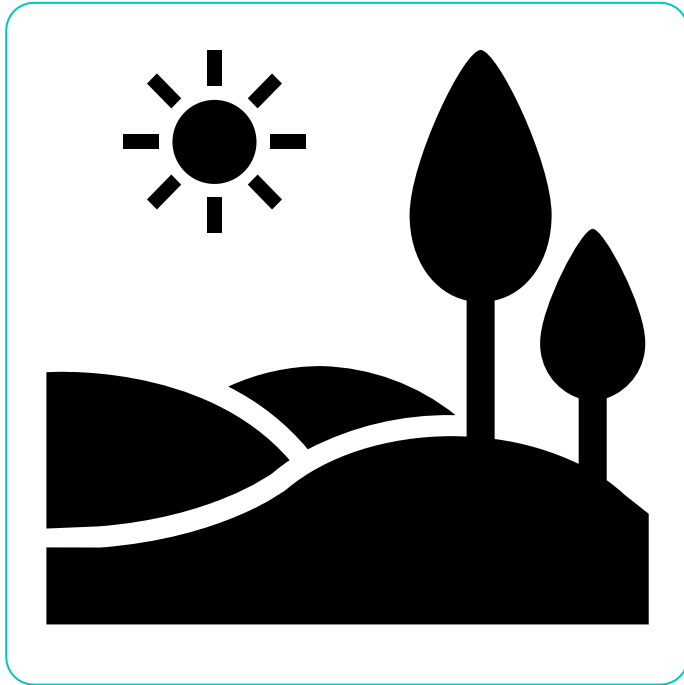
- Poor pay of UK NHS staff compared to EU, Aus etc.
- Pension changes
- Disincentivizing tax system – penalties if 'working too much'
- Retention issues
  - Fastest time to Orthopaedic consultancy - 11 years vs 5 years
  - Poor succession planning
- Family or elderly relatives abroad
- Lack of standardized digital health
- Moral dilemma: "A rich country should not be taking staff from developing countries with even greater healthcare delivery problems"

'Grass is Greener'

Alternative Careers

- 21% planning on leaving the NHS for an alternative career (n=5521)
  - "Drexit"
- "Put simply, we nurture a system which treats doctors badly."
  - *Retaining the doctors we train, G Quiney, BMJ Sep '21*
- Health tech, management roles, medical device industry, banking
- NHS Clinical Entrepreneurship Program
- Sunken-cost fallacy

Q's and Discussion

"That's all Folks!"