

Capital Markets Day

2018

Lars Marcher, CEO

Michael Højgaard, CFO

Ballerup, 4 October 2018

Agenda

- 0 Update since Capital Markets Day 2017
- 1 Status on Big Five 2020
- 2 A clinical perspective on endoscopy
- 3 US go-to-market
- 4 New product launches
- Break/product viewing (15 min.) —
- 5 Financial outlook 2020
- 6 Q&A

Lars Marcher, Ambu CEO

Lars Konge, Professor, MD Rigshospitalet

Lars Marcher, Ambu CEO

Michael Højgaard, Ambu CFO

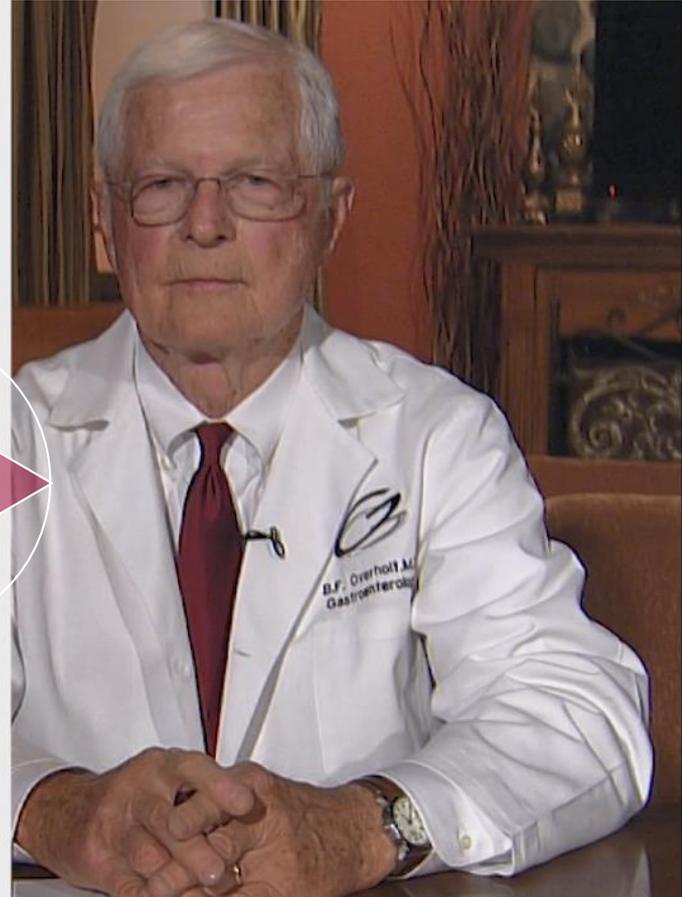
Lars Marcher and Michael Højgaard

September 2018

Interview with Dr. Bergein (Gene) F. Overholt

Knoxville, TN USA

- Past President of the American Society for Gastrointestinal Endoscopy
- Inventor of the flexible sigmoidoscope (precursor of the flexible colonoscope)
- Leader in the development of the first endoscopic ambulatory surgery center for GI patients
- Former member of AMSURG

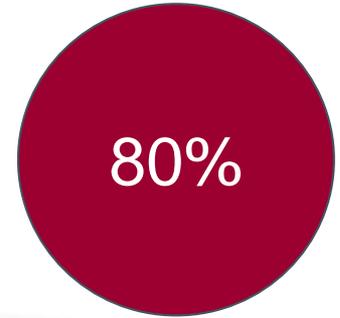


Our vision is that 80% of flexible endoscopy will be single-use

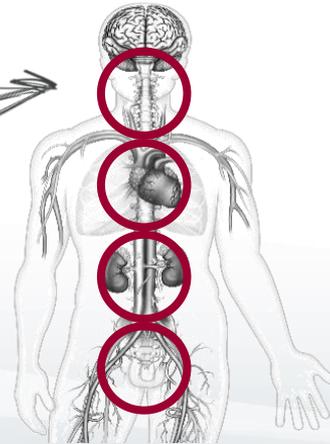
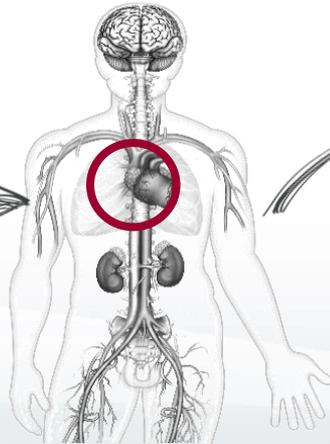
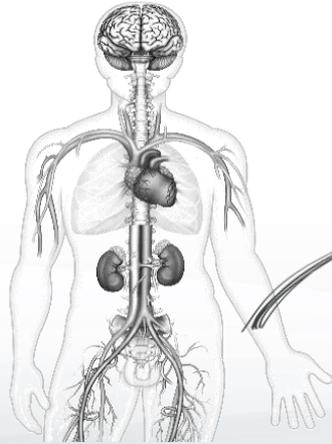
Pioneer in pulmonary

Become full solution provider

Ambu's vision



of flexible endoscopy procedures will become single-use



Before Ambu
Zero single-use options

Ambu -2017
5 mio. procedures

Ambu 2017-20
100 mio. procedures

Internal and external forces support our vision

External forces

Push from authorities

Public awareness



Single-use validated

New studies

Internal forces

Dedicated sales force for visualization has been in place for 12-18 months

R&D scale-up in 2016-18 is now fully operational

Invendo has been integrated into our Malaysian factory, R&D and US Sales

The number of **customers that primarily use aScope** has grown to +400

4 new products ready for 2018/19 launch and a strong pipeline

Capital Markets Day 2018

1

We increase financial 2020 guidance

- Ambu
Capital Markets Day 2017
- Last year
- Revenue of **DKK 5 bn** including M&A →
 - Organic revenue CAGR growth of **13-15%**
 - EBIT margin in 2020 of **24-25%**

2

We are becoming a full provider of flexible endoscopes

- Within our Big Five strategy we will have a selected offering of flexible endoscopes →

3

We increase our visualisation market

- We increase our visualisation market from 5 million to **~50 million annual procedures** →

Ambu
Capital Markets Day 2018

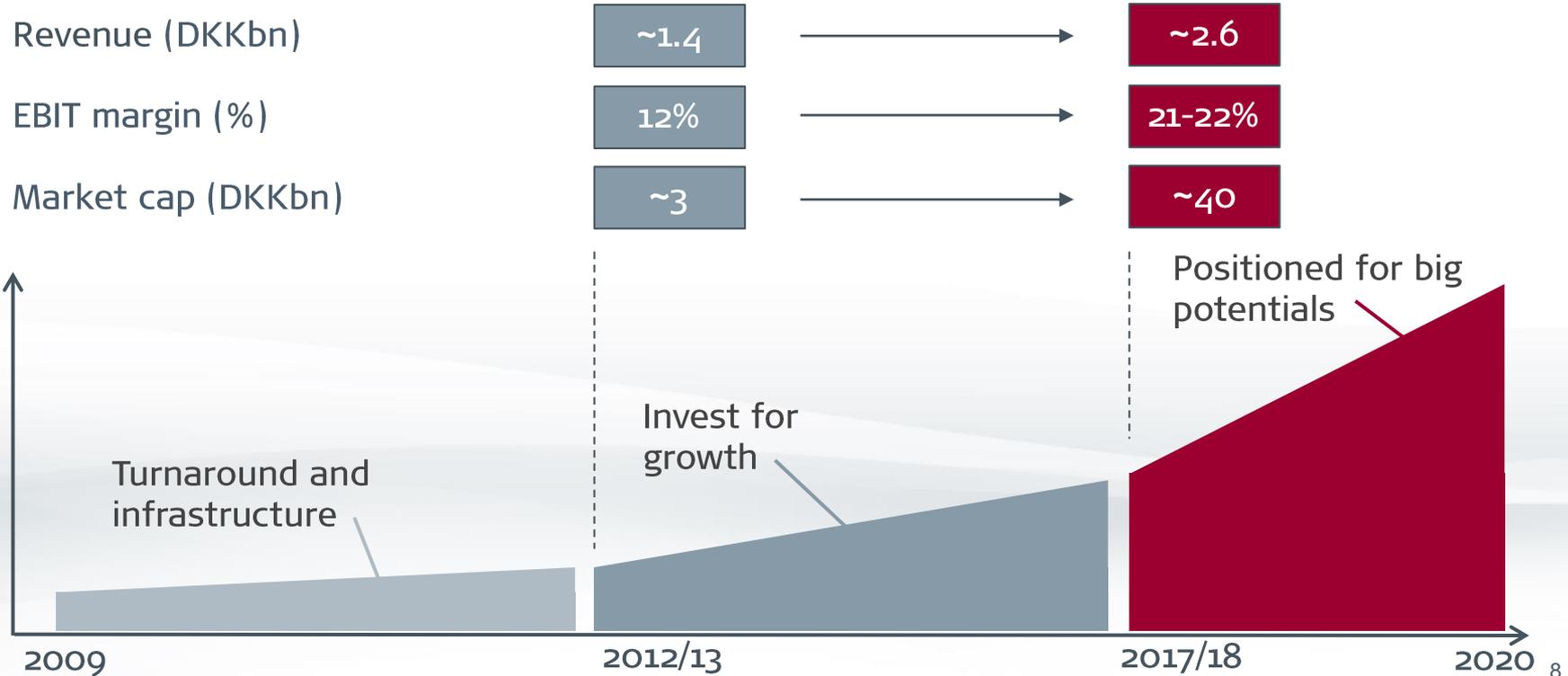
Today

- Revenue of **DKK 5 bn** including M&A
 - Organic revenue CAGR growth of **16-18%**
 - EBIT margin in 2020 of **26-28%**
-
- We will deliver a full single-use flexible portfolio in 2020 (on track)
 - We launch **4 new products** in the FY 2018/19 (two ENT scopes, SC210 colonoscope and the aScope BronchoSampler)
-
- We increase our visualisation market from ~50 to **~100 million annual procedures** following the Invendo acquisition and further market studies

Agenda

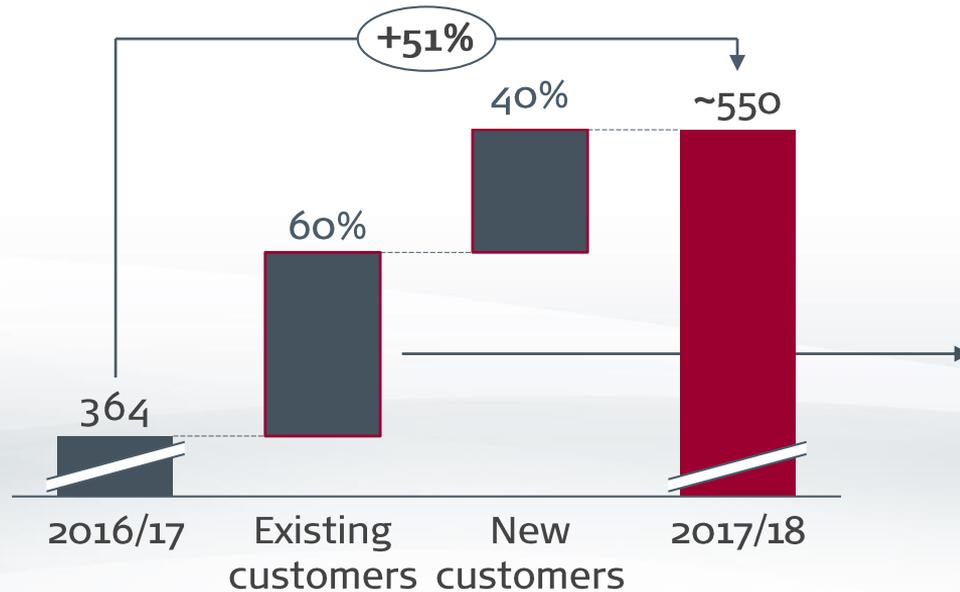
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- Lars Marcher and Michael Højgaard

Ambu has transformed in the past 5 years



In FY 2017/18, we sell ~550k endoscopes

Growth comes from a healthy customer mix
'000 endoscopes sold by customer type



- with similar adoption patterns
Typical aScope adoption process



aScope starts in one department for specific procedures



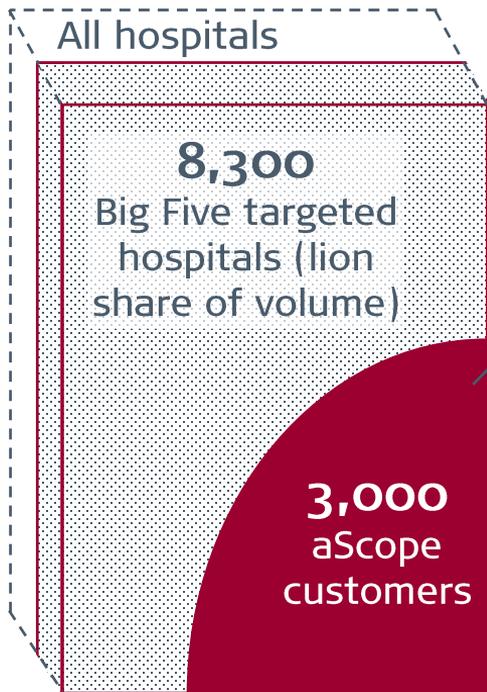
It is then quickly adopted for more procedures



From there it spreads to other hospital departments

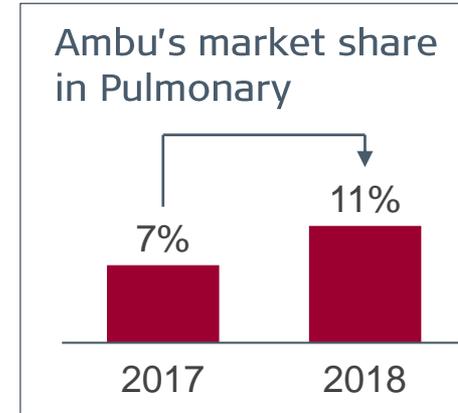
More than 3,000 customers have already adopted aScope and 400+ have gone single-use

- But there is greater potential



Great penetration potential

Full penetration case proved



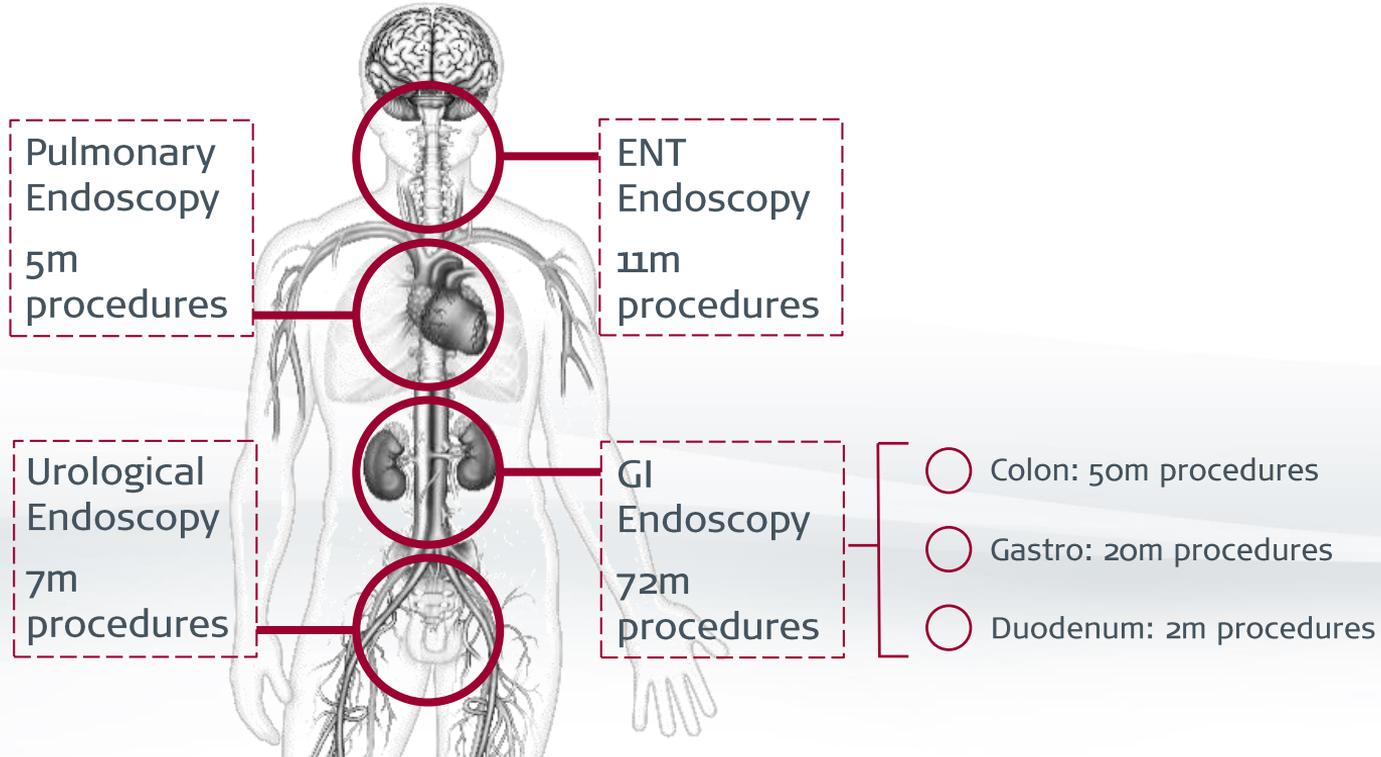
~1/7 aScope accounts have gone single-use (>80% aScope)



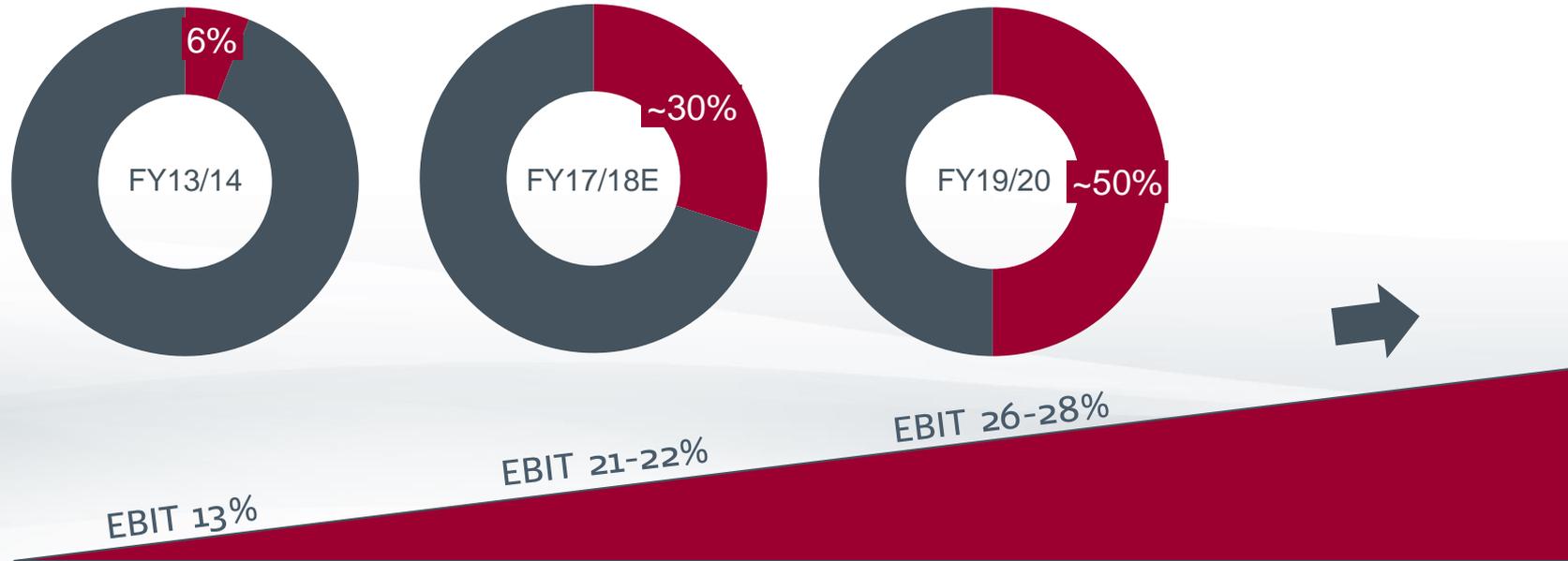
~1/3 customers use aScope more than reusables



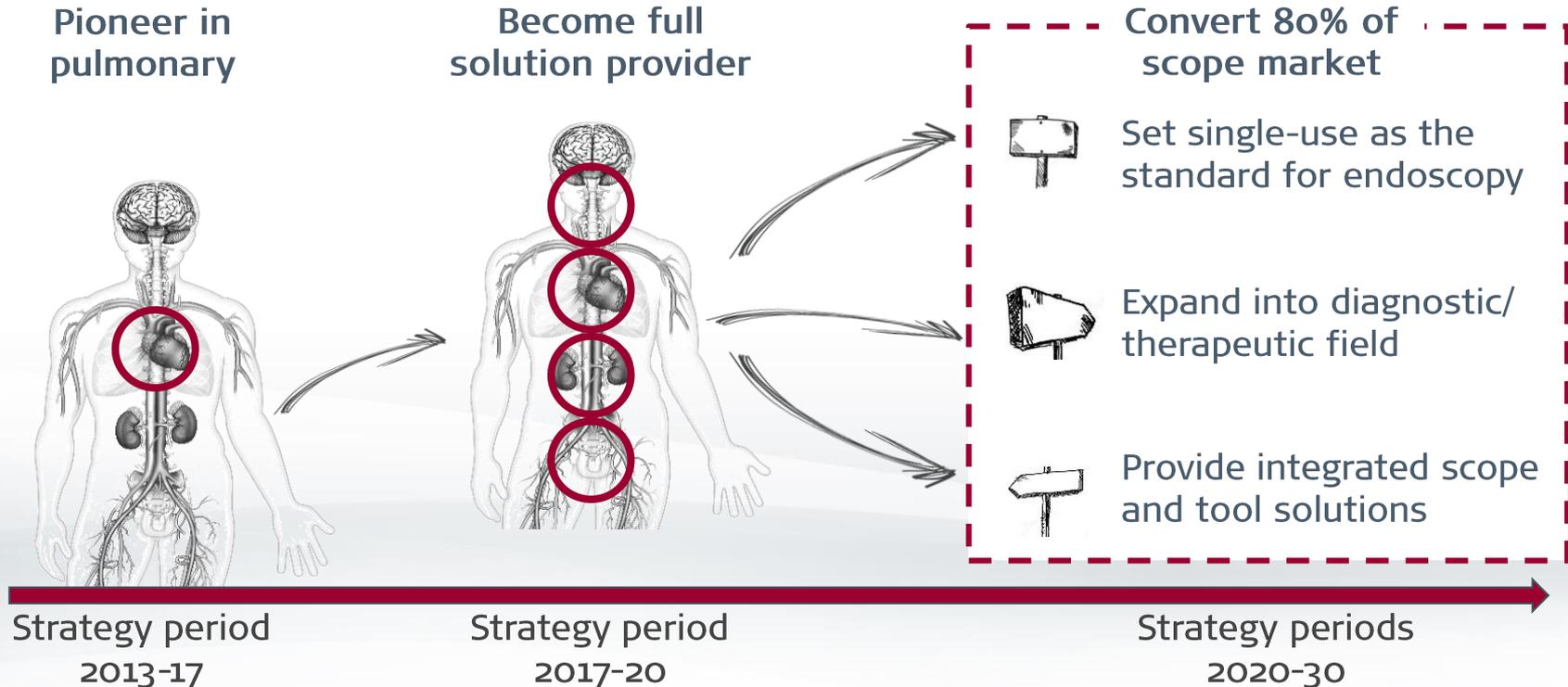
We will target ~100 million procedures in four areas of flexible endoscopy



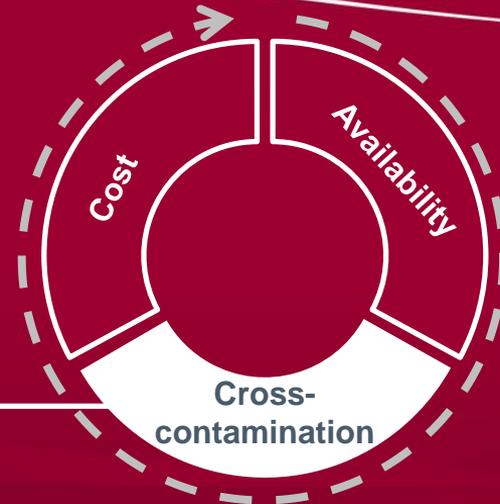
Accelerating visualisation market from 5 to ~100m procedures will lift profitability



Our move to become a full solution provider by 2020 is the first step in realizing our vision



A closer look at cross-contamination as an adoption driver



There is a need for change in endoscopy

- Increasing concern of cross-contamination

2019 Top 10 **ECRI**Institute
The Discipline of Science. The Integrity of Independence.
Health Technology Hazards

1. Hackers Can Exploit Remote Access to Systems, Disrupting Healthcare Operations
2. "Clean" Mattresses Can Ooze Body Fluids onto Patients
3. Retained Sponges Persist as a Surgical Complication Despite Manual Counts
4. Improperly Set Ventilator Alarms Put Patients at Risk for Hypoxic Brain Injury or Death
5. Mishandling Flexible Endoscopes after Disinfection Can Lead to Patient Infections
6. Confusing Dose Rate with Flow Rate Can Lead to Infusion Pump Medication Errors
7. Improper Customization of Physiologic Monitor Alarms

FDA News Release
FDA warns duodenoscope manufacturers about failure to comply with required postmarket surveillance studies to assess contamination risk

U.S. FOOD & DRUG ADMINISTRATION

Medical Device Recalls

1 to 30 of 30 Results

Related Medical Device Recalls

Product Description	Recall Class	FDA Recall Posting Date	Recalling Firm
Z-3283-2018 - Bronchoscope.BF-1100	2	09/29/2018	Olympus Corporation of The Americas
Z-3312-2018 - Bronchoscope.BF-1140	2	09/29/2018	Olympus Corporation of The Americas
Z-3285-2018 - Bronchoscope.BF-11180	2	09/29/2018	Olympus Corporation of The Americas
Z-3286-2018 - Bronchoscope.BF-11240	2	09/29/2018	Olympus Corporation of The Americas

Preventable Tragedies: Superbugs and How Ineffective Monitoring Medical Device Safety Fails Patients



A Bronchoscope is Linked Again in the U.S. to an Outbreak of the Feared 'CRE' Superbug

Are the lessons that other devices taught us about safety being learned and applied to bronchoscopes?

Lawrence F Muscarella PhD

Oct 1, 2018 – A bronchoscope has been linked to "multiple infections" of a potentially life-threatening superbug, according to a regulatory report filed just a few months ago.

On May 31st, a manufacturer informed the FDA of this apparent outbreak of CRE, which was identified by a medical facility in the U.S.



This blog's article is likely the first to publicly disclose and discuss these reported infections.

Persistent contamination on colonoscopes and gastroscopes detected by biologic cultures and rapid indicators despite reprocessing performed in accordance with guidelines.

Ofstead CL¹, Wetzler HP², Doyle EM², Rocco CK², Visrodia KH³, Baron TH⁴, Tosh PK⁵.

Author information

Abstract

BACKGROUND: Pathogens have been transmitted via flexible endoscopes that were reportedly reprocessed in accordance with guidelines.

FDA GUIDANCE ON REPROCESSING

FDA issues final guidance on reprocessing of medical devices

FDA WARNING LETTERS ISSUED

FDA issues warning letters to Olympus, Pentax and Fujifilm for failing to report MDRs to FDA on reusable scopes

FDA WARNING STATEMENT

FDA issues safety communication regarding infections caused by reprocessing process on flexible bronchoscopes

IMPROPER CLEANING SPREADING DISEASES

Inadequate "Cleaning of Flexible Endoscopes Before Disinfection Can Spread Deadly Pathogens" is #1 on ECRI Top 10 Health Technology Hazards for 2016

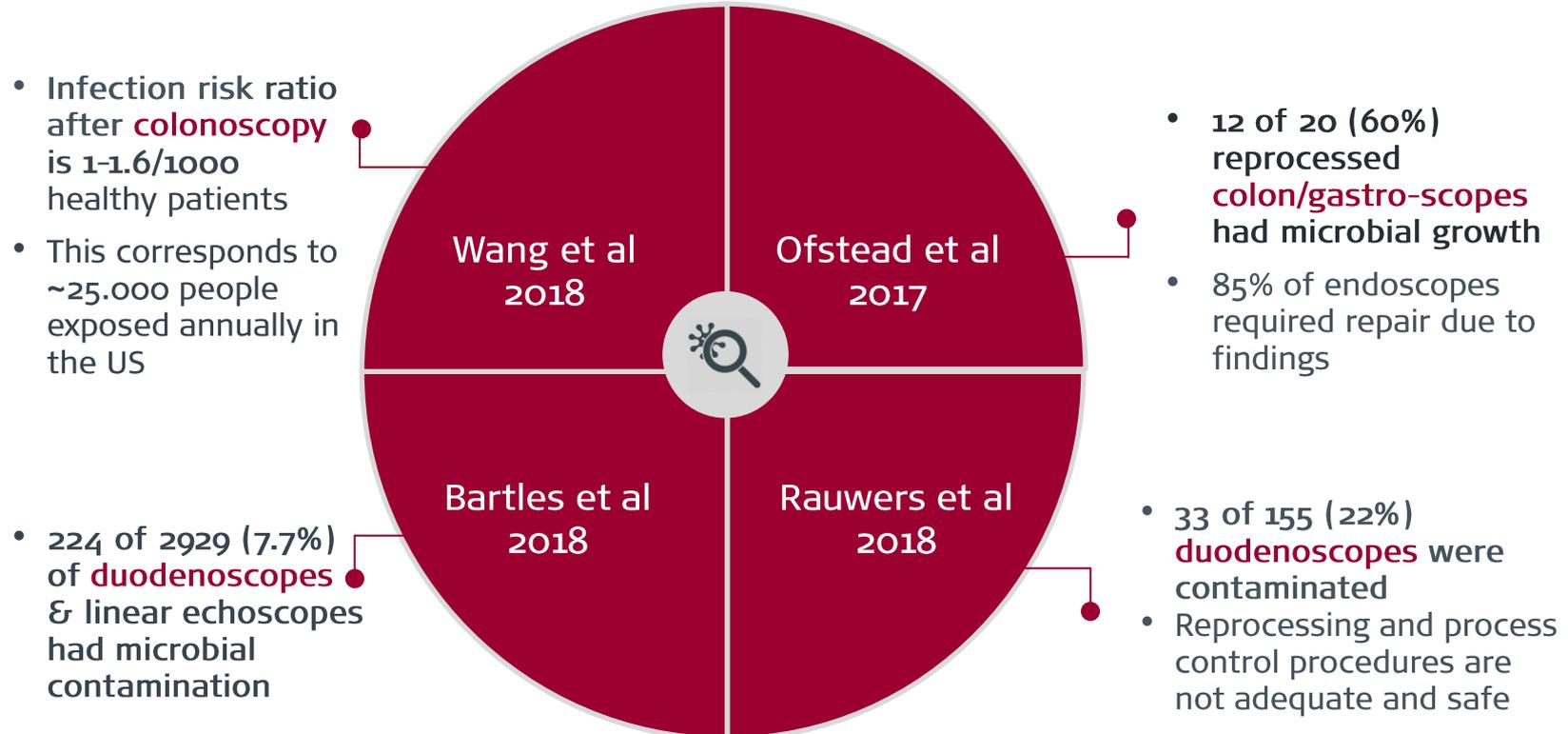
CDC SAFETY ALERT ISSUE

CDC releases "Essential Elements of a Reprocessing Program for Flexible Endoscopes – Recommendations of the HICPAC"

FDA WARNING LETTERS ISSUED

FDA warns Olympus, Pentax and Fujifilm to prevent infections associated with the transmission of bacteria from contaminated duodenoscopes

Recent GI studies show that patients are put at risk of infection when reusable scopes are used



Wang et al (2018): Rates of Infection after colonoscopy - Johns Hopkins

Ofstead et al (2017): Longitudinal assessment of reprocessing effectiveness for colonoscopes and gastroscopes

Rauwers et al (2018): High prevalence rate of digestive tract bacteria in duodenoscopes

Bartles et al (2018): A randomized trial of single versus double high-level disinfection of duodenoscopes and linear echoendoscopes using standard automated reprocessing

Cross-contamination persists and both academia and authorities believe it is underreported

2018 incidence of duodenum transmission



“Duodenoscope design flaws leading to transmission of multidrug-resistant organisms persist despite recent initiatives to improve device safety”¹

Cross-contamination risk is underreported

Lack of surveillance

There is a lack of surveillance of infections occurring after endoscopy^{2,6}

Lack of viable reprocessing validation methods

There is a need for inexpensive and reliable methods for checking adequacy of reprocessing^{1,4}

Under-reporting to authorities

Market failure to report incidences made FDA unable to accurately assess risks with duodenoscopes^{3,5,6}

1 Shenoy et al (2018): Transmission of Mobile Colistin Resistance (mcr-1) by Duodenoscope

2 Ofstead et al (2013): Re-evaluating endoscopy-associated infection risk estimates and their implications

3 FDA (MAUDE database): "... the incidence or prevalence of an event cannot be determined from this reporting system alone due to potential under-reporting of events..."

4 Higa et al (2018) Optimizing duodenoscope reprocessing: rigorous assessment of a culture and quarantine protocol

5 US Senate hearing: Preventable Tragedies: Superbugs and How Ineffective Monitoring of Medical Device Safety Fails Patients; Reusable endoscope providers... "failed to report to FDA the information necessary to make the current postmarket surveillance system work properly. Hospitals also generally failed to... proactively alert federal authorities... As a result, FDA was unable to accurately assess and quickly react to the risks posed by closed-channel duodenoscopes."

6 Humphries et al (2015): Superbugs on Duodenoscopes: the Challenge of Cleaning and Disinfection of Reusable Devices

Why cross-contaminations in colonoscopies can be difficult to detect

Patient case – Patti Damare (53)
Los Angeles



After a colonoscopy, Patti felt delirious and weak. During the following days, she felt increasingly bad until she could not get out of bed.

She was diagnosed with E. coli infection and sepsis.

The infection likely stemmed from the colonoscopy.

"It sucked the life out of me for a year"

Why contamination can be difficult to detect

The bulk of colonoscopies are performed on healthy individuals, so

- patients are typically home again when symptoms materialize

- infections may materialize differently in otherwise healthy individuals

- few infections will be life threatening in people with a strong immune system

Public awareness of cross-contamination risk is rising

24 July, 2018

66
99

"Patients must start grilling doctors about (...) the cleanliness of scopes"

Time for that colonoscopy? First, ask your doctor how the scopes are cleaned

By EMILY BAZAN
Kaiser Health News | JUL 24, 2018



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31 January, 2017

Bacteria survive cleaning efforts in damaged medical scopes, study finds



Damaged ends of colonoscopes show scratched, cloudy brown and, right, black and brown debris around channel outlet. (Courtesy of Olympus & Associates Inc., American Journal of Infection Control)



By Chad Terhune

JANUARY 31, 2017, 11:00 AM

Rigorous cleaning practices don't ensure that medical scopes are free of contamination, and many of these reusable devices have scratches and dents that could harbor blood, tissue and bacteria, a new study found.

The seven-month study, published Tuesday in the American Journal of Infection Control, found that 12 of 20 gastroscopes and colonoscopes examined tested positive for bacterial growth, even after being disinfected using the current guidelines or additional measures.

66
99

"Those scopes shouldn't be in use. I'm amazed the gastroenterologist could even see anything because the lens was covered in so much crud"

The single-use value proposition speaks to every stakeholder's needs



Payers



- Cost-effective solution
- Reduced infection risk

Patients



- Increased feeling of safety
- Reduced infection risk

Regulatory bodies



- No cross-contamination
- Alternative to current

Hospital management



- Lower capital cost
- Workflow simplicity

Doctors



- Scope availability
- Always access to new tech

The cost of endoscopy is an increasing burden for hospital budgets



Scopes (capital cost)

- Significant capital investment
- Hospitals need to buy excess scopes to compensate for increasing reprocessing times

One hospital "...had to buy almost four times as many scopes that they previously had"
Public Hospital IX, Otolaryngologist (UK)¹



Repairs

- Reusables get worn
- Any scratch poses infection risk
- More reprocessing means more wear & tear

"... the biggest problems I have with endoscopes are that they can break quite a bit and the time it takes to sanitize them"
Private Practice I, Otolaryngologist (US)¹



Reprocessing

- It is estimated to cost 114-281 USD to reprocess one endoscope²
- Stricter reprocessing requires new equipment, tracking, and staff hires

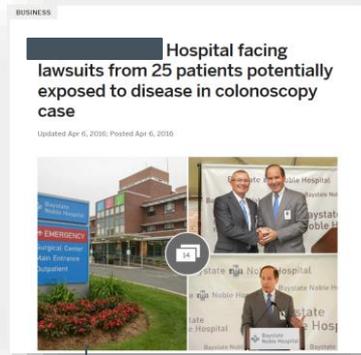
It takes >100 steps and 76 min. to reprocess one bronchoscope²

¹ Customer quotes from 2017 Beacon group research

² Ofstead et al (2017). "A glimpse at the true cost of reprocessing endoscopes: Results of a pilot project" - International Journal of Healthcare Central Service Material Management

Hospital & patient concerns are increasing

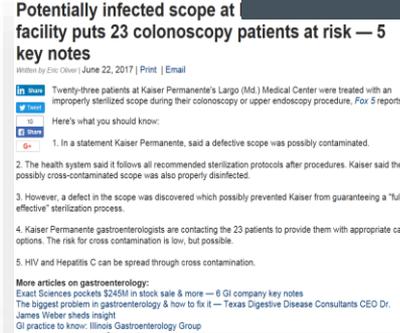
2016



A US hospital faces lawsuits from 25 patients potentially exposed to disease during colonoscopy

293 patients potentially exposed to hepatitis B & C and HIV

2017



23 patients were possibly treated with an improperly sterilized scope during their colonoscopy

A scope defect prevented the hospital from guaranteeing effective sterilization

Some hospitals attempt to shift responsibility to the patient

Acknowledgement form for patient signature

██████████ ENDOSCOPE ACKNOWLEDGEMENT FORM

Dear Patient,

Please read this form carefully and discuss it with your physician before you decide to have your endoscopic procedure.

Your physician has determined that you need to have a procedure that uses an instrument called an endoscope. The endoscope will be inserted into your body during the procedure. ██████████ recently identified an issue involving endoscopes that are manufactured by ██████████. ██████████ endoscopes are used for procedures like yours in ██████████ and many other hospitals in the ██████████.

There are unknown risks of using the endoscope(s) in your procedure. A residue has been identified on the instrument that may be an adhesive used in the manufacturing process. The high-level disinfection (HLD) machine used to clean (sterilize) the endoscopes does not remove the residue. ██████████ has given us instructions to further clean the scopes after the HLD process, but we can't be completely sure that the residue, and what may lay under it, is eliminated by further cleaning.

We have no way to be certain what the risks are with each endoscope. The residue may be covering a life-threatening contagion (bacteria or virus). Prior patients on whom the scopes were used could have had communicable diseases such as Hepatitis or HIV. We want you to know that ██████████ facilities have used ██████████ endoscopes for decades, and no outbreaks or patient safety concerns have been identified as a result of the residual. Although the exact level of risk can't be determined, after considerable investigation, Texas Health Chief Medical Officers and ██████████ rate the risk of use of the endoscopes, even with the residual, to be low, as no harm to patients has been identified since the initial use of the endoscopes.

One of the alternatives to having your procedure at a ██████████ is to transfer to another facility that does not use ██████████ endoscopes. Whether or not transferring is the best option depends on your medical condition and whether a delay in treating you would present a higher degree of risk. Please discuss this alternative with your physician prior to having your procedure.

Your physician is aware of the information you are receiving in this acknowledgment form and has determined that your risk of not having the procedure, emergently, outweighs the risk of using the ██████████ endoscope for your procedure. Please discuss any concerns you have with your physician.

██████████ and our hospitals want to be completely open with you. We ask that you sign below as your acknowledgment of the information we have provided to you.

Acknowledged by: _____

Signature of patient or authorized representative Date

W/Iness

Example from Texas, 2017

“66
99”

“Your physician has determined that you need to have a procedure with an instrument called an endoscope (...)”

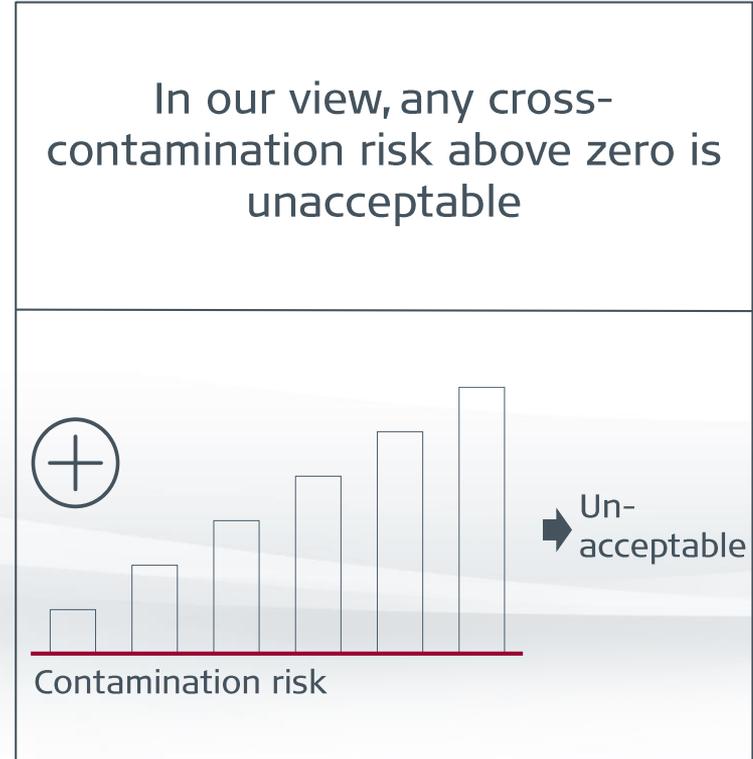
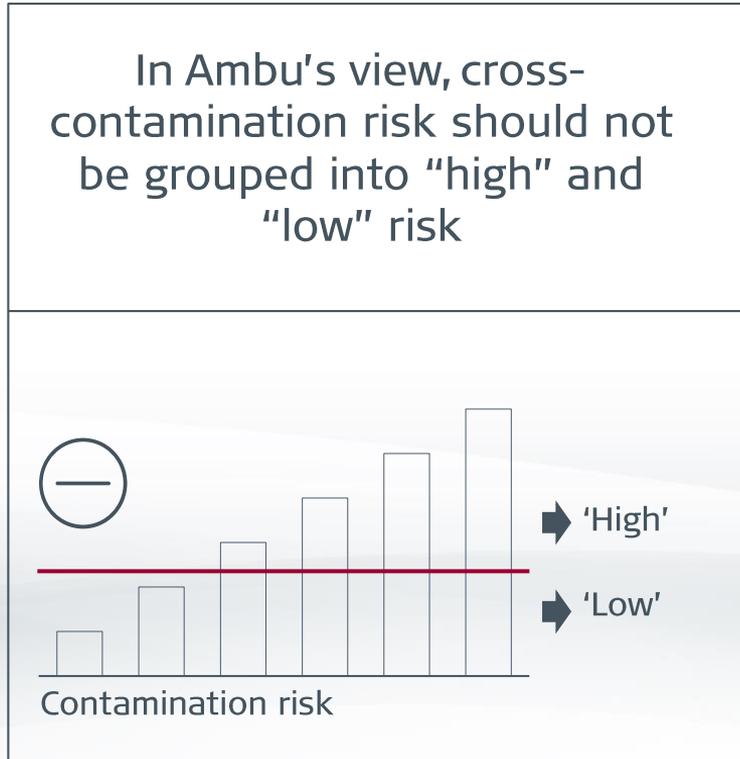
“66
99”

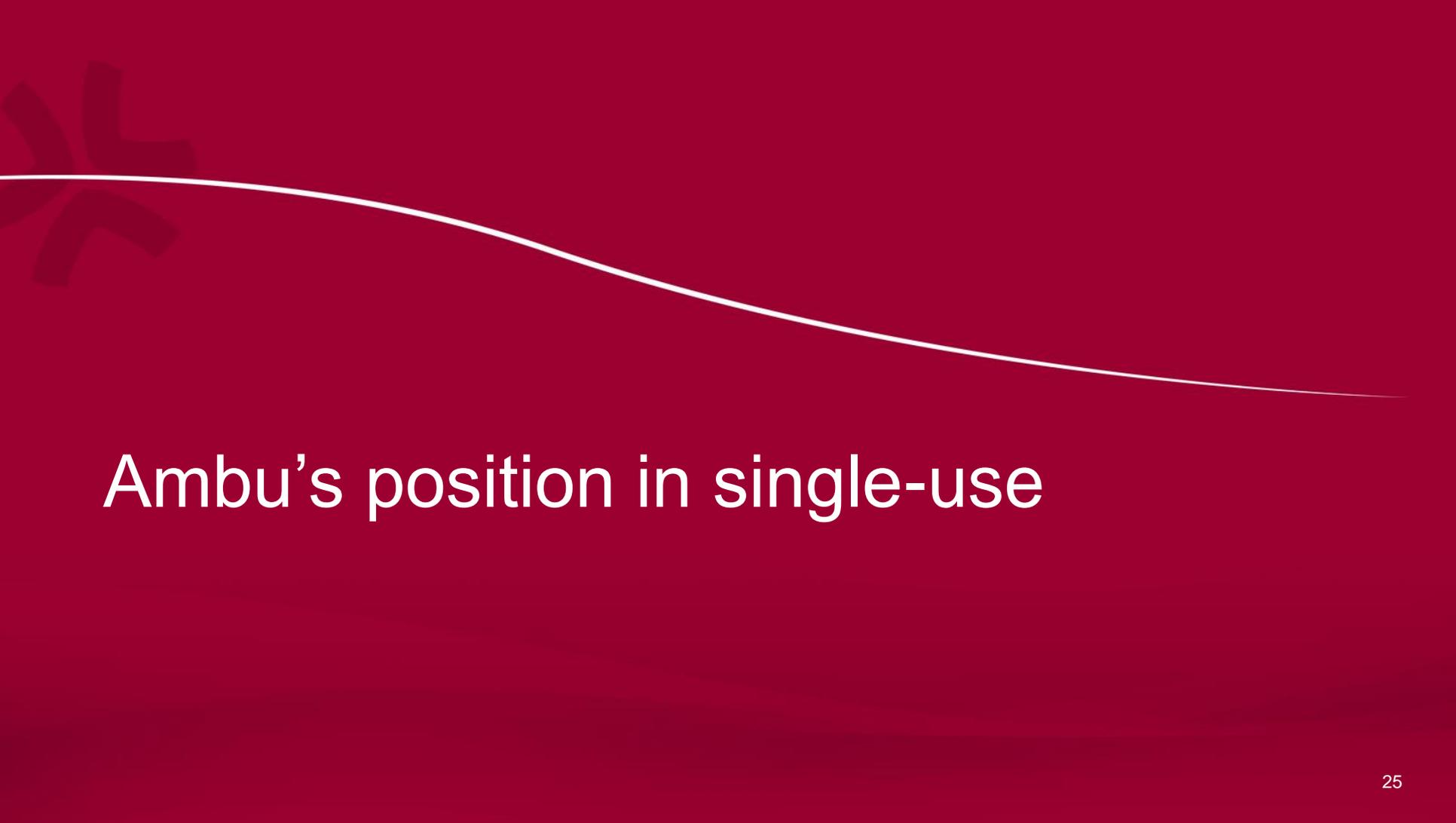
“We have no way to be certain what the risks are with each endoscope (...)
Residue may be covering a life-threatening contagion.”

“66
99”

“Prior patients on whom the scopes were used could have had communicable diseases such as Hepatitis or HIV”

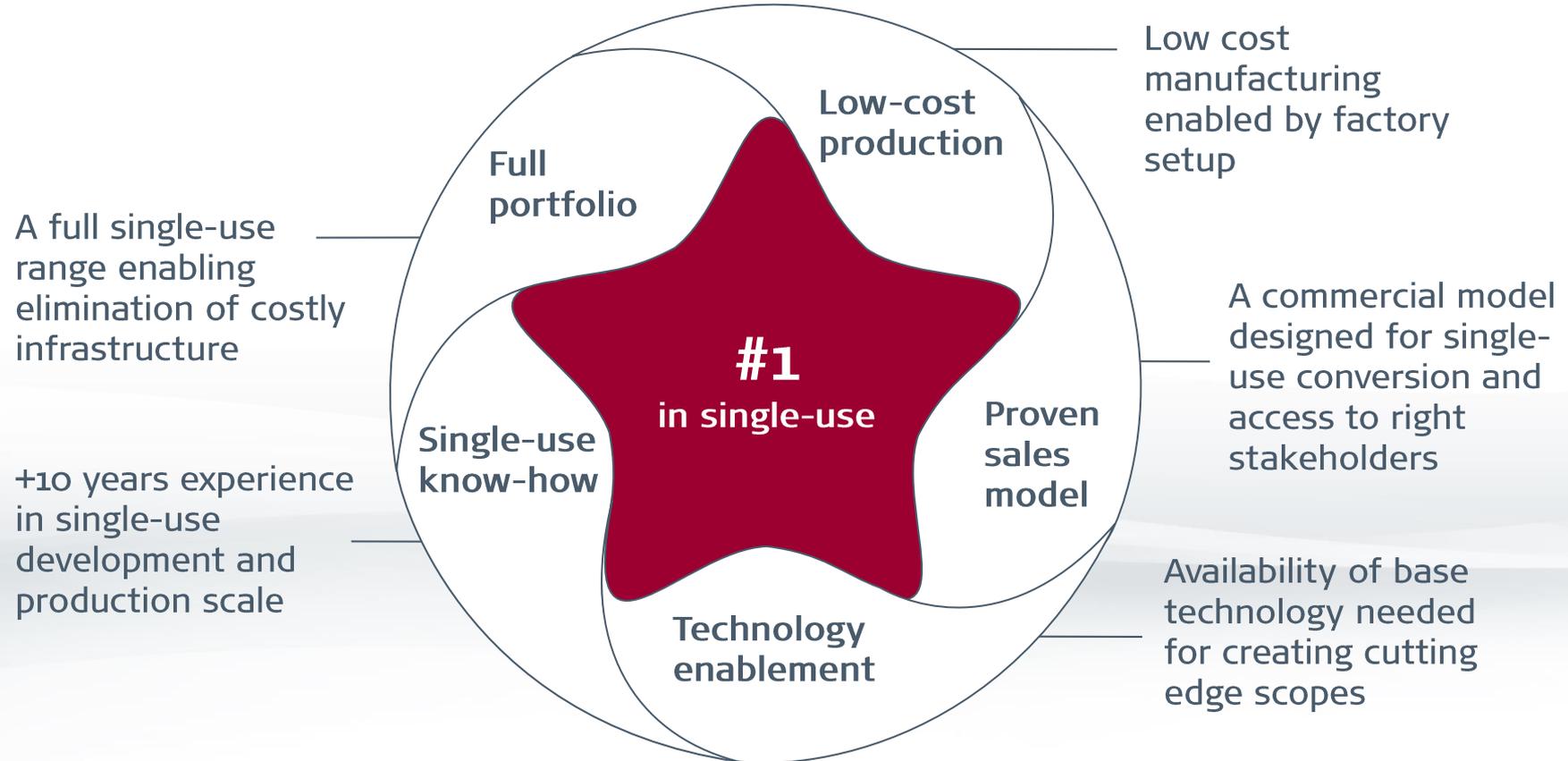
When is risk of cross-contamination low enough? In our view any risk is unacceptable





Ambu's position in single-use

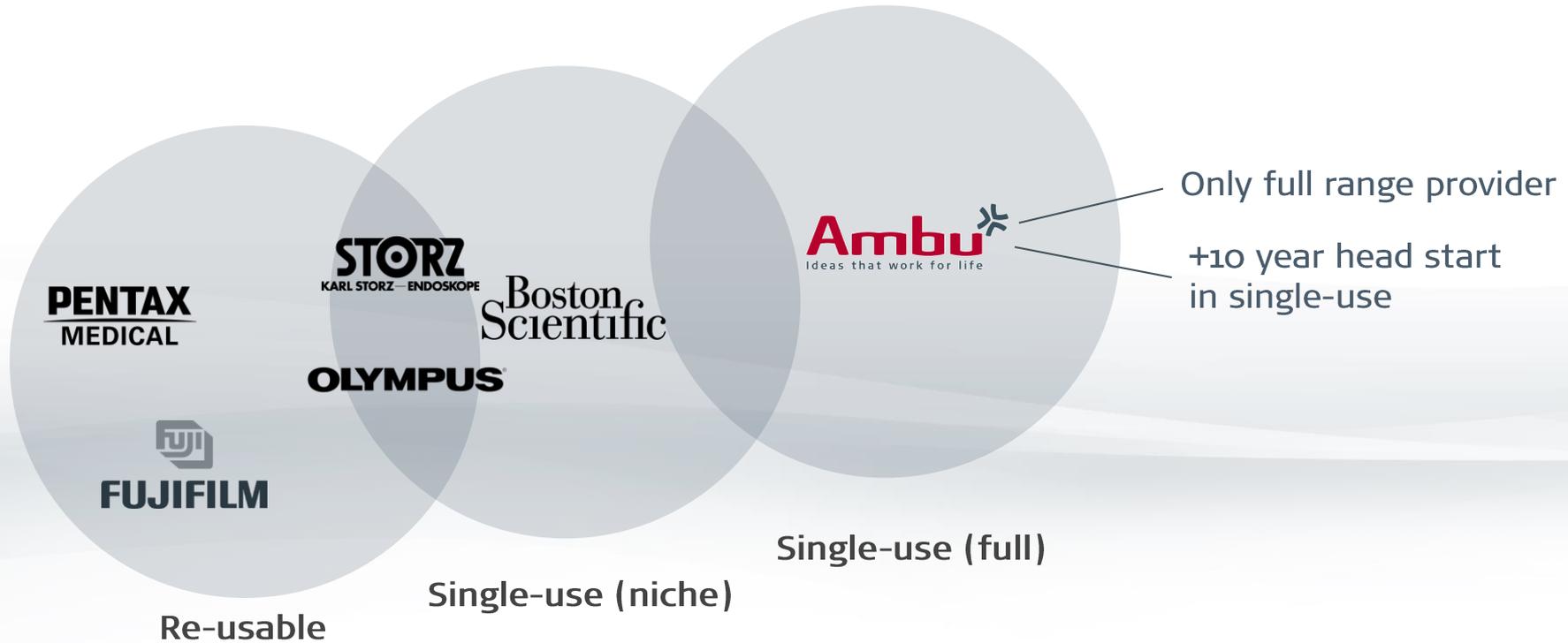
We have built up unique competencies needed for single-use endoscopy



Ambu is well positioned to establish single-use endoscopy in health care



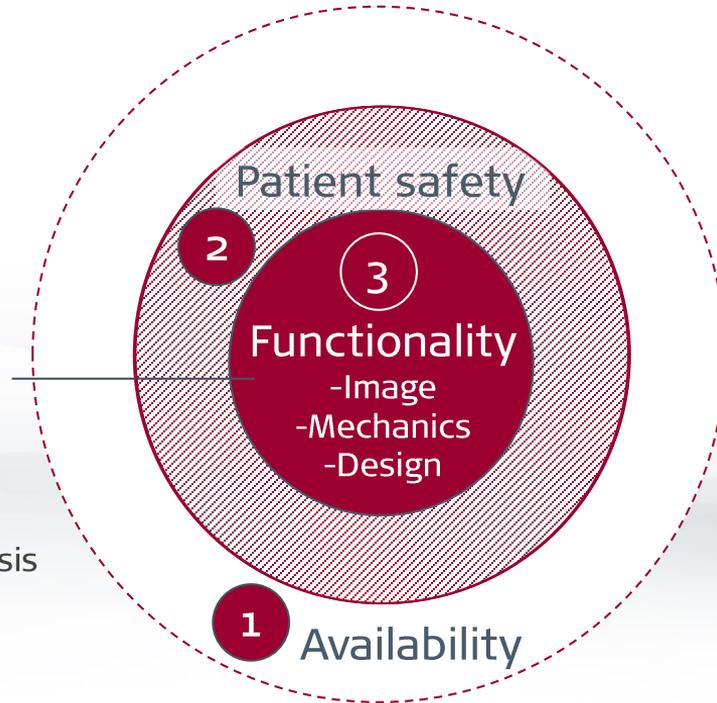
We expect more competition going forward
- The single-use scope competitive landscape in 2020+



Single-use delivers on the three main criteria for endoscopy choice at hospitals

Availability, patient safety and functionality

Single-use functionality is sufficient for a significant share of procedures
e.g. safe secretion removal and cell sampling for diagnosis

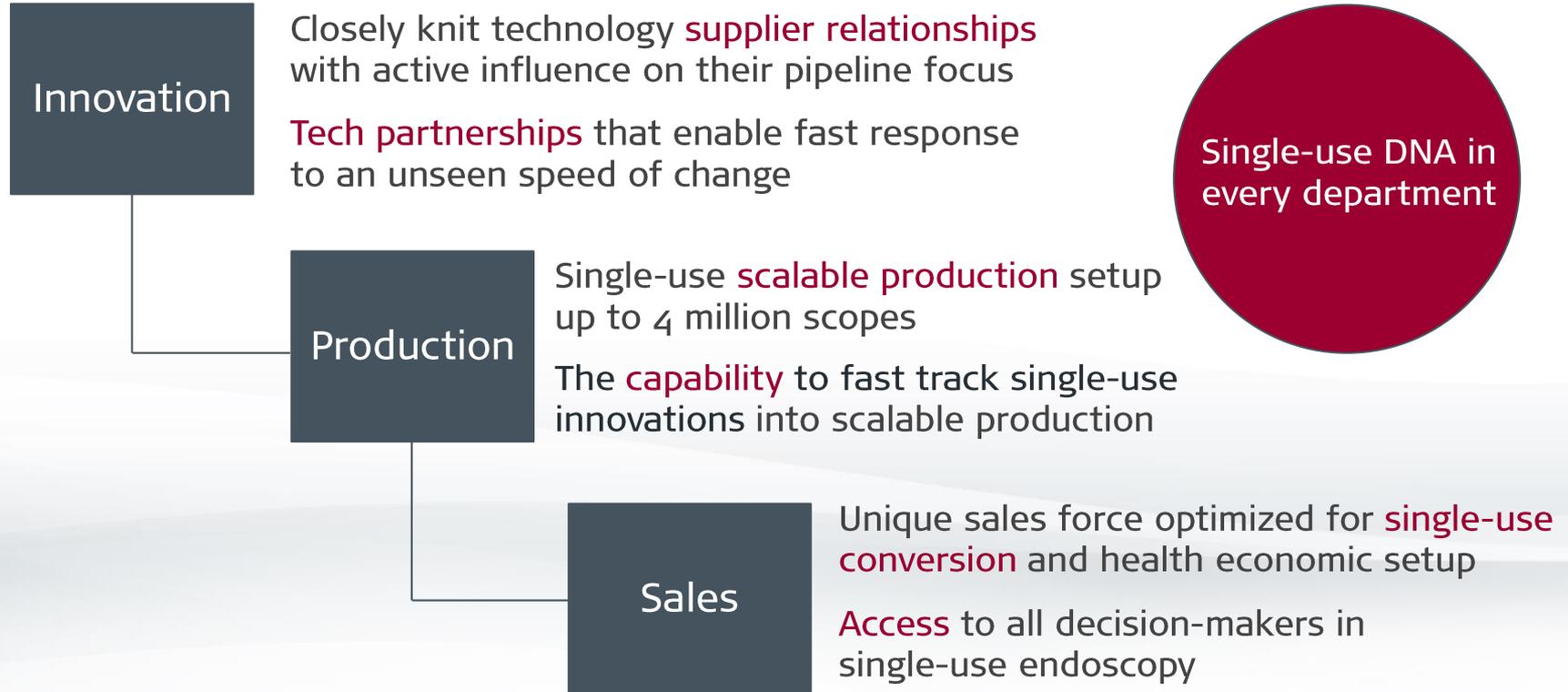


Single-use is tech-enabled

- Base technologies on par and/or developing exponentially
- Design free not to consider reprocessing / wear & tear
- Over time, we will enhance functionality to achieve our vision



Ambu's profile and head-start will enable us to sustain our competitive edge



Any questions?

Q&A



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- Lars Marcher and Michael Højgaard

A Clinical Perspective on Endoscopy



**Professor Lars Konge, PHD, Certified Cardio-thoracic Surgeon
Head of Research, Copenhagen Academy for Medical Education and Simulation,
Rigshospitalet
Professor of Medical Education, University of Copenhagen
Adjunct professor of Innovation and Simulation, University of Southern
Denmark**



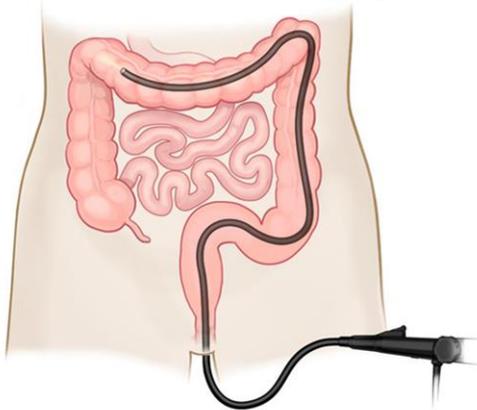
Bronchoscopy



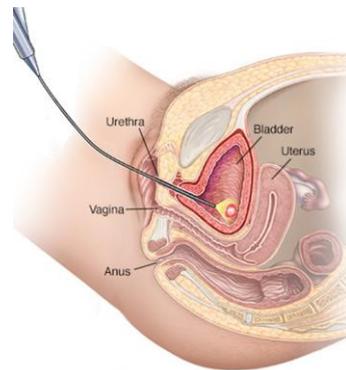
Gastroscopy



Colonoscopy



Cystoscopy



Most frequent surgical operations and procedures performed in hospitals (per 100 000 inhabitants)

	Cataract surgery	Diagnostic bronchoscopy with or without biopsy	Transluminal coronary angioplasty	Colonoscopy with or without biopsy	Appendectomy
Belgium (¹)	1 119.4	278.8	227.0	1 902.3	137.5
Bulgaria	428.5	:	:	:	109.0
Czech Republic	1 081.4	:	214.8	:	129.6
Denmark	994.3	264.9	189.6	2 946.4	119.2
Germany	1 027.7	459.8	393.2	813.3	159.6
Estonia	1 104.2	:	218.8	:	159.1
Ireland	226.4	213.4	132.8	1 679.4	151.8
Greece	:	:	:	:	:
Spain	721.6	82.1	125.8	417.8	108.8
France	1 207.2	:	237.3	:	115.2
Croatia	808.8	587.6	314.6	2 090.3	62.1
Italy	867.7	91.4	209.6	219.2	72.7
Cyprus	232.8	41.1	144.0	108.5	61.0
Latvia (²)	102.4	606.7	:	207.7	127.4
Lithuania	780.5	307.4	286.3	337.8	178.9
Luxembourg	1 084.7	190.3	149.9	1 161.2	92.3
Hungary	956.1	:	208.3	38.2	99.0
Malta	1 066.8	67.2	201.2	1 812.8	120.4
Netherlands	:	:	:	:	:
Austria	1 235.0	266.8	279.0	:	147.3
Poland	458.8	215.4	245.2	471.9	71.4
Portugal	1 418.8	:	121.3	:	92.0
Romania	399.7	112.0	106.4	440.8	202.7
Slovenia	893.5	158.9	197.3	105.0	122.7
Slovakia (³)	175.1	:	:	:	108.2
Finland	1 040.3	42.0	218.5	74.5	127.3
Sweden	1 029.3	109.0	204.6	1 020.0	133.2
United Kingdom	735.6	92.2	127.5	1 564.4	90.0



Hippocratic Oath

***"The regimen I adopt shall be
for the benefit of the patients
to the best of my power and judgment,
not for their injury or for any wrongful purpose"***



Deadly bacteria on medical scopes trigger infections

[Peter Eisler](#), USA TODAY Published 6:21 p.m. ET Jan. 21, 2015 | Updated 3:06 p.m. ET March 19, 2015

A deadly bacteria linked to a commonly used medical device. Jean Enersen reports.



(Photo: Centers for Disease Control)



Editor's note: This story originally was published January 21, 2015, at 6:21 p.m. EST. It has been updated to add video and links.

The deadly pattern of illnesses began to emerge in 2012 at hospitals in Seattle, Pittsburgh, Chicago. In each case, the culprit was a bacteria known as CRE, perhaps the most feared of superbugs, because it resists even "last defense" antibiotics — and kills up to 40% of the people it infects.



EXECUTIVE BRIEF

Top 10 Health Technology Hazards for 2017

A Report from *Health Devices*
November 2016

1. Infusion Errors Can Be Deadly If Simple Safety Steps Are Overlooked
2. Inadequate Cleaning of Complex Reusable Instruments Can Lead to Infections
3. Missed Ventilator Alarms Can Lead to Patient Harm
4. Undetected Opioid-Induced Respiratory Depression
5. Infection Risks with Heater-Cooler Devices Used in Cardiothoracic Surgery
6. Software Management Gaps Put Patients, and Patient Data, at Risk
7. Occupational Radiation Hazards in Hybrid ORs
8. Automated Dispensing Cabinet Setup and Use Errors May Cause Medication Mishaps
9. Surgical Stapler Misuse and Malfunctions
10. Device Failures Caused by Cleaning Products and Practices

health
DEVICES

ECRI Institute
The Discipline of Science. The Integrity of Independence.





ORIGINAL ARTICLE

High prevalence rate of digestive tract bacteria in duodenoscopes: a nationwide study

Arjan W Rauwers,¹ Anne F Voor in 't holt,² Jolanda G Buijs,³ Woutrinus de Groot,² Bettina E Hansen,¹ Marco J Bruno,¹ Margreet C Vos²

BMJ

Rauwers AW, *et al. Gut* 2018;**67**:1637–1645. doi:10.1136/gutjnl-2017-315082

bsg

Duodenoscope type	N	Contam.	Not contam.
All duodenoscopes	150	33 (22%)	117 (78%)
Olympus TJF-Q180V	69	15 (22%)	54 (78%)
Olympus TJF-160VR	43	13 (30%)	30 (70%)
Olympus TJF-160R	8	1 (13%)	7 (87%)
Olympus TJF-140R	2	0	2
Olympus TJF-145	2	0	2
Pentax ED34-i10T	11	3 (27%)	8 (73%)
Pentax ED-3490TK	8	0	8
Pentax ED-3680TK	1	0	1
Fujifilm ED-530XT8	5	0	5
Fujifilm ED-530XT	1	1 (100%)	0



[Original Research]



Effectiveness of Reprocessing for Flexible Bronchoscopes and Endobronchial Ultrasound Bronchoscopes

Cori L. Ofstead, MSPH; Mariah R. Quick, MPH; Harry P. Wetzler, MD, MSPH; John E. Eiland, RN, MS; Otis L. Heymann, BA; David A. Sonetti, MD; and J. Scott Ferguson, MD, FCCP

RESULTS: Researchers examined 24 clinically used bronchoscopes. After manual cleaning, 100% of bronchoscopes had residual contamination. Microbial growth was found in 14 fully reprocessed bronchoscopes (58%), including mold, *Stenotrophomonas maltophilia*, and *Escherichia coli/Shigella* species. Visible irregularities were observed in 100% of bronchoscopes, including retained fluid; brown, red, or oily residue; scratches; damaged insertion tubes and distal ends; and filamentous debris in channels. Reprocessing practices were substandard at two of three sites.







Hippocratic Oath

***"The regimen I adopt shall be
for the benefit of the patients
to the best of my power and judgment,
not for their injury or for any wrongful purpose"***



Deadly bacteria on medical scopes trigger infections

Peter Eisler, USA TODAY Published 6:21 p.m. ET Jan. 21, 2015 | Updated 3:06 p.m. ET March 19, 2015

The FDA says in a written statement to USA TODAY that it is "aware of and closely monitoring" the infection risks associated with the scopes. "Some parts of the scopes may be extremely difficult to access and clean thoroughly," the agency adds, "and effective cleaning of all areas of the duodenoscope may not be possible."

The agency is studying the problem and working with manufacturers to determine whether new cleaning protocols should be mandated or the scopes should be redesigned entirely. Meanwhile, the scopes' "lifesaving" ability to detect and treat potentially fatal digestive disorders outweighs their infection risks, the statement adds. "It (is) important for these devices to remain available."



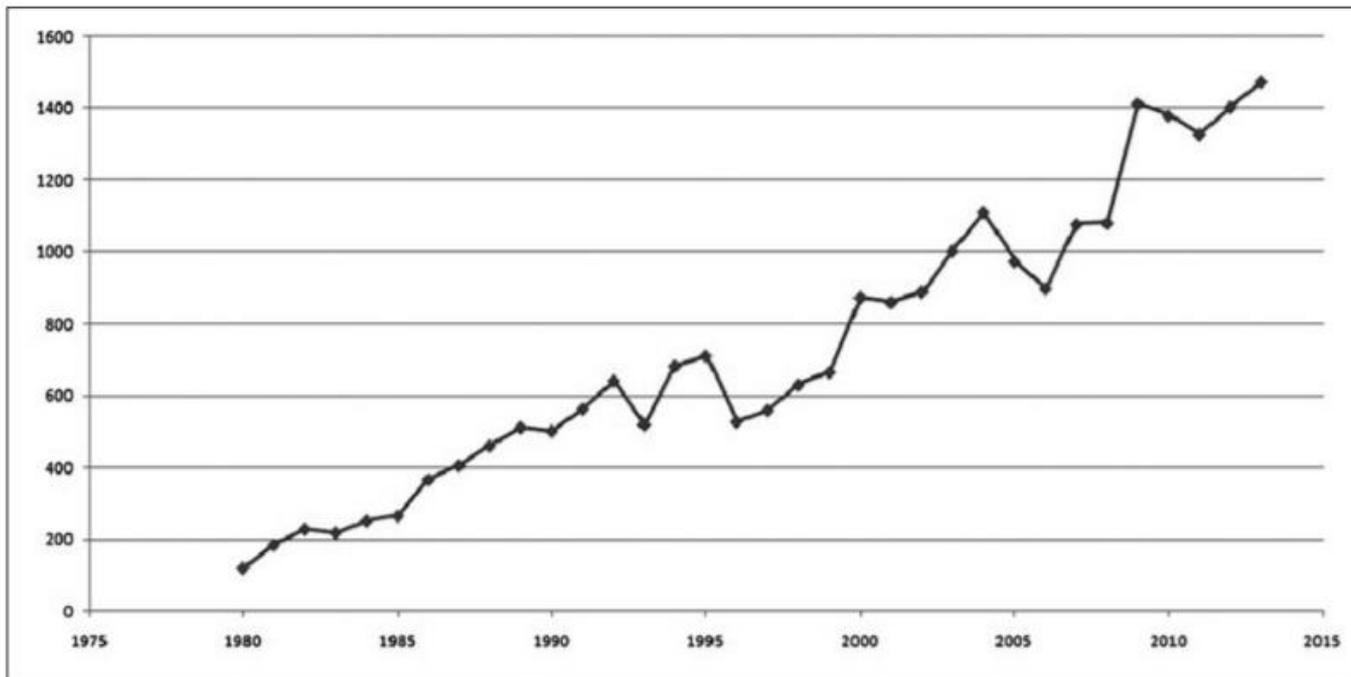


Figure 1: Line diagram depicting the number of flexible bronchoscopies performed during the study period

Original Article

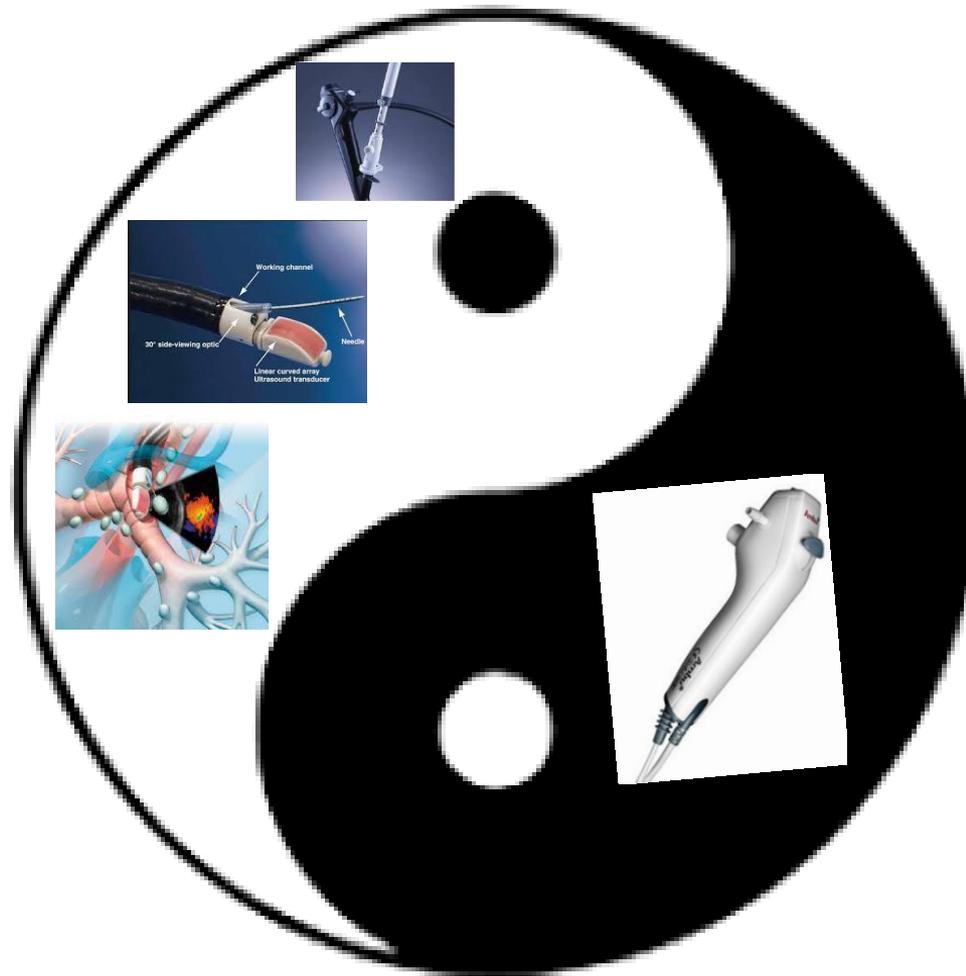
Indications for performing flexible bronchoscopy: Trends over 34 years at a tertiary care hospital

Ankit Amar Gupta, Indrapaul Singh Sehgal, Sahajal Dhooria, Navneet Singh, Ashutosh Nath Aggarwal, Dhareej Gupta, Digambar Behera, Ritesh Agarwal

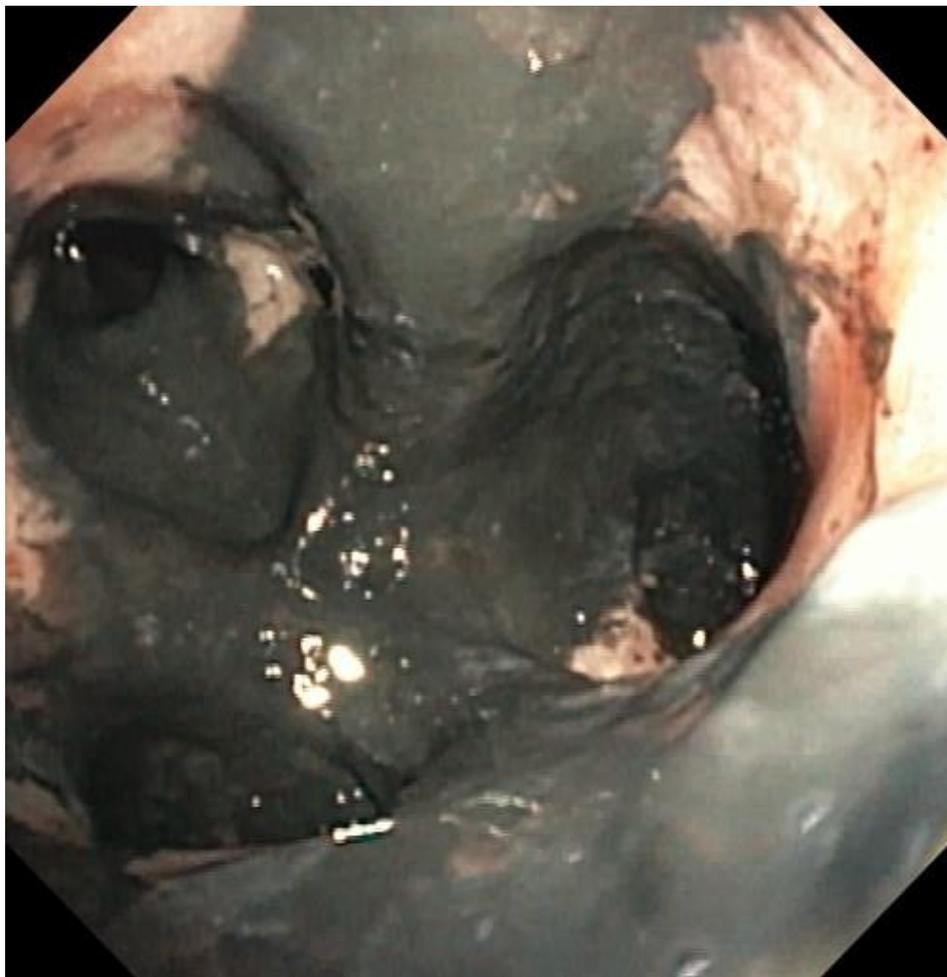
Department of Pulmonary Medicine, Postgraduate Institute of Medical Education and Research, Chandigarh, Haryana and Punjab, India









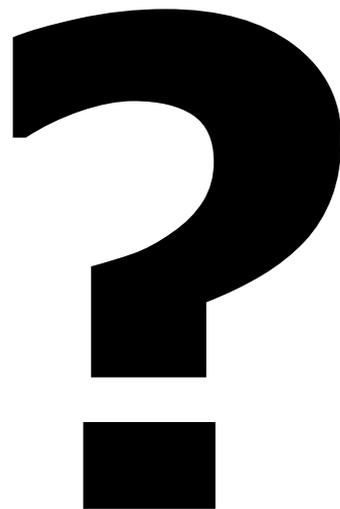




WHAT THE FUTURE MIGHT BRING

- More flexible endoscopies
- Better flexible endoscopes
- Single use scopes for the majority of procedures
- Reusable scopes reserved for more advanced procedures



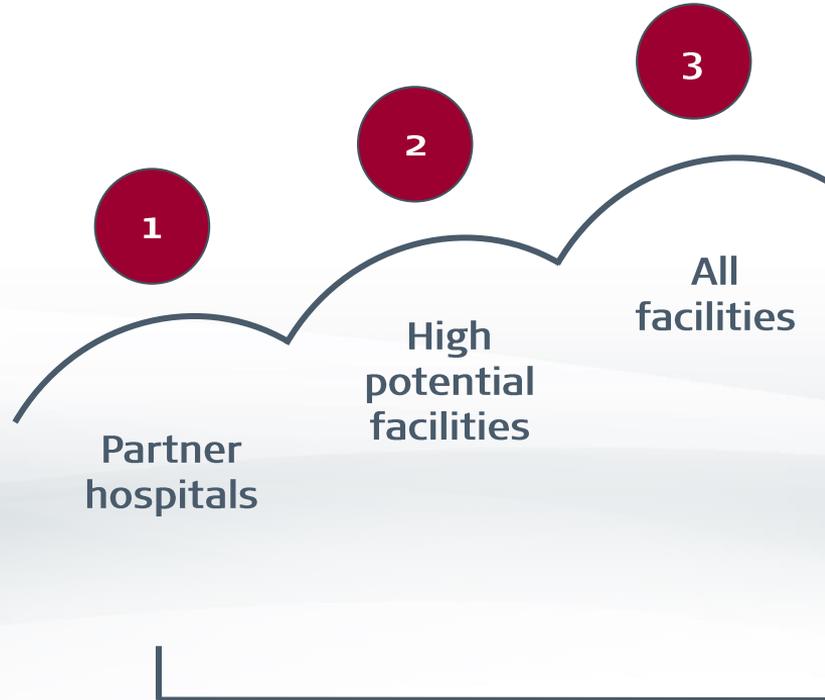


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 - Break/product viewing (15 min.) —
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We have a clear plan for accelerating early adoption with access to single-use facilities

Commercial roll out in three phases

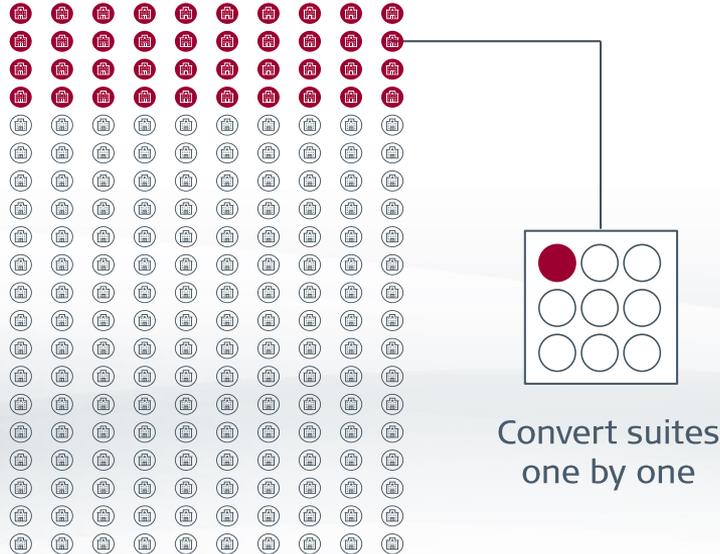


For early adoption, we will target facilities where decision-makers have fully bought into the single-use concept

Ambu already has partnerships with hospitals that have made the full conversion to single-use

The US go-to-market strategy targets early adopters already onboard the single-use concept

Target Ambu's single-use US accounts



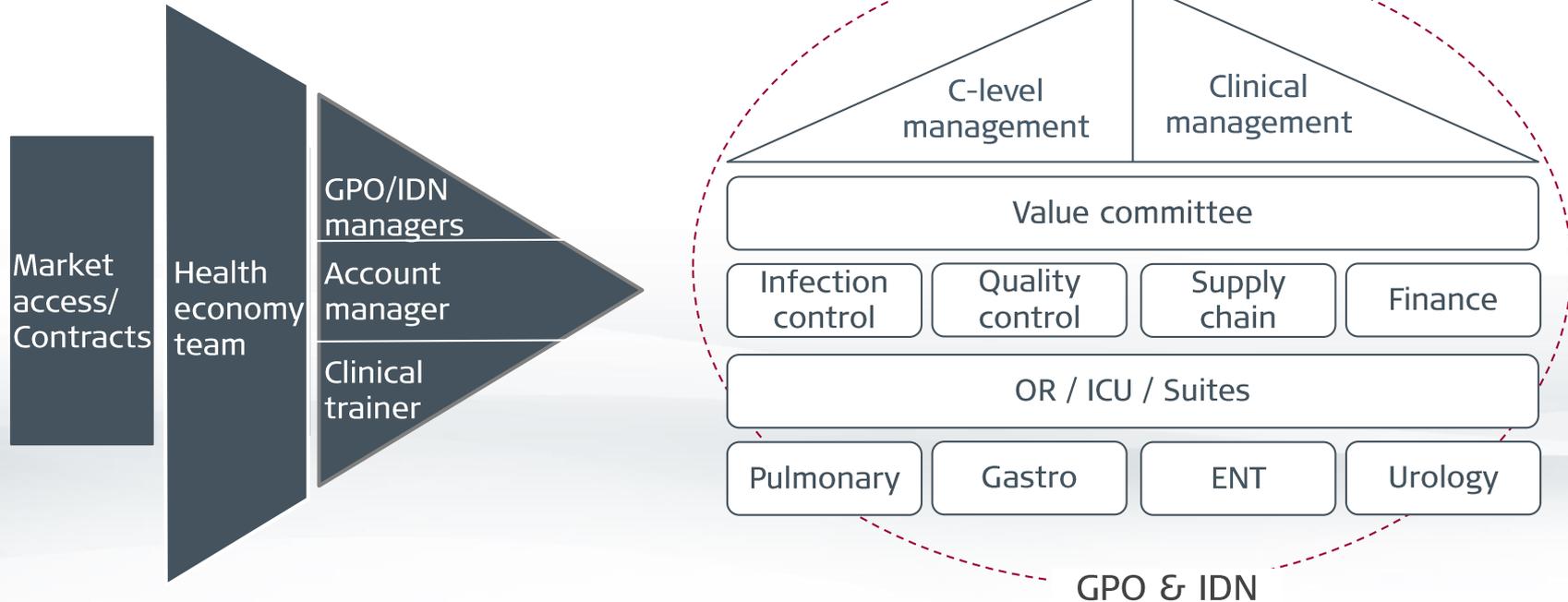
The customer case for single-use

-  Enable patient choice
-  Improve hospital image and reduce liability risk for hospital
-  Increase capacity at small upfront investment
-  Increase options for high risk patients
-  Keep availability despite stricter reprocessing requirements

Ambu's US sales organization dedicated to selling single-use visualisation - ready for new scopes

We have optimized our commercial model for single-use sales

- with access to all levels relevant for single-use



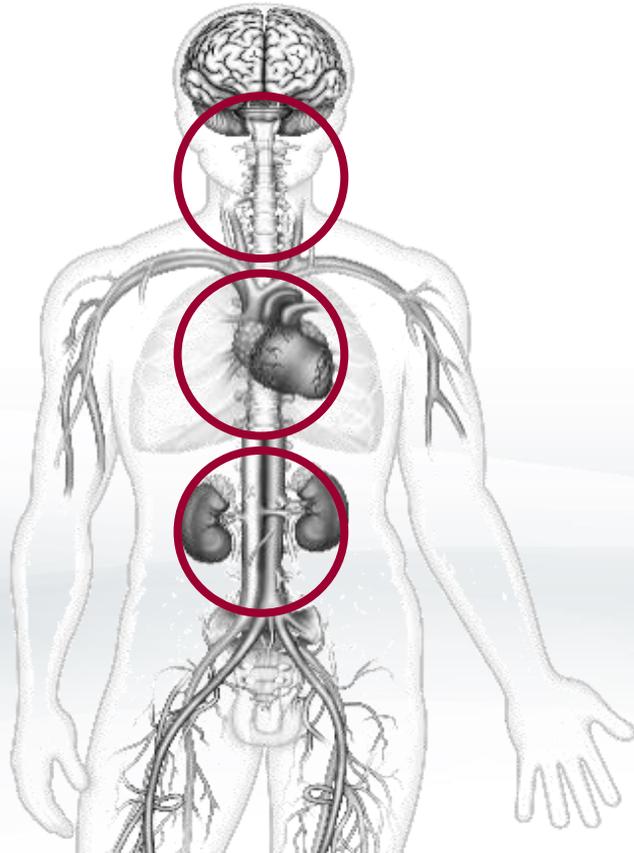
Several initiatives will accelerate performance in the coming year



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Today we present four new single-use solutions for launch in 2018/19



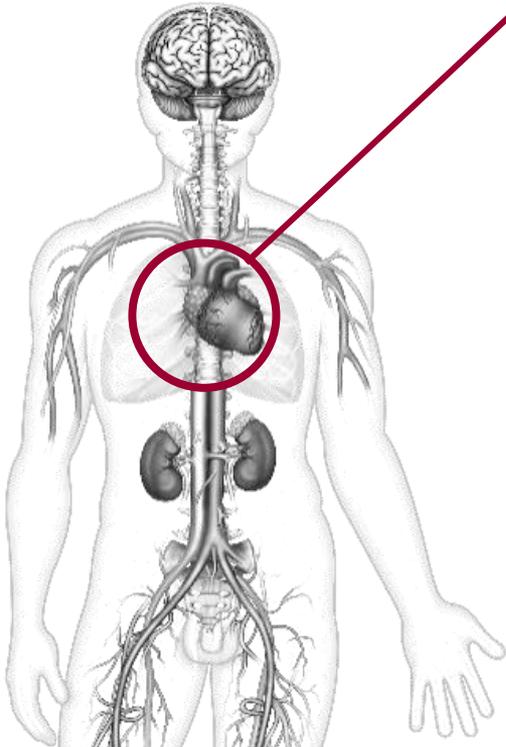
1	aScope BronchoSampler™	Q1, 2018/19
2	aScope™ 4 RhinoLaryngo Intervention (ENT)	Q1, 2018/19
3	aScope™ 4 RhinoLaryngo Slim (ENT)	Before Summer, 2019
4	SC210 Colonoscope	Q1, 2018/19



aScope BronchoSampler™

1 The aScope BronchoSampler™

An accessory for aScope 4 Broncho. A sampling solution for bronchoscopic sampling during procedures like Broncho Alveolar Lavage (BAL) and Bronchial Wash (BW) procedures where fluid is obtained from the lung for analysis



1 aScope BronchoSampler™ targets 1.9 m procedures in the 5 m pulmonary market

Market size



Current challenges

Procedure workflow is cumbersome and introduces **contamination risk**

The current setup is vulnerable to movements, leading to **sample loss**

Infection detection may be delayed due to dependence on resource **availability** & accessory handling

1 aScope BronchoSampler™ reduces risk of sample loss and simplifies procedures

Our solution

Simplify workflow

Workflow improvement by allowing a single clinician to perform sampling

Reduce sample loss

Closed-loop system that reduces risk of sample loss and contamination

Increase availability

A purpose-built solution with all critical components



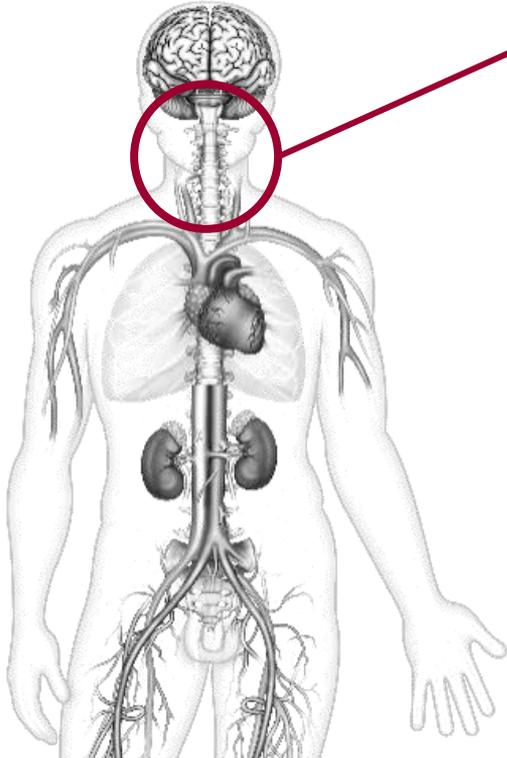
USD 81



aScope™ 4 RhinoLaryngo

2 + 3 aScope™ 4 RhinoLaryngo

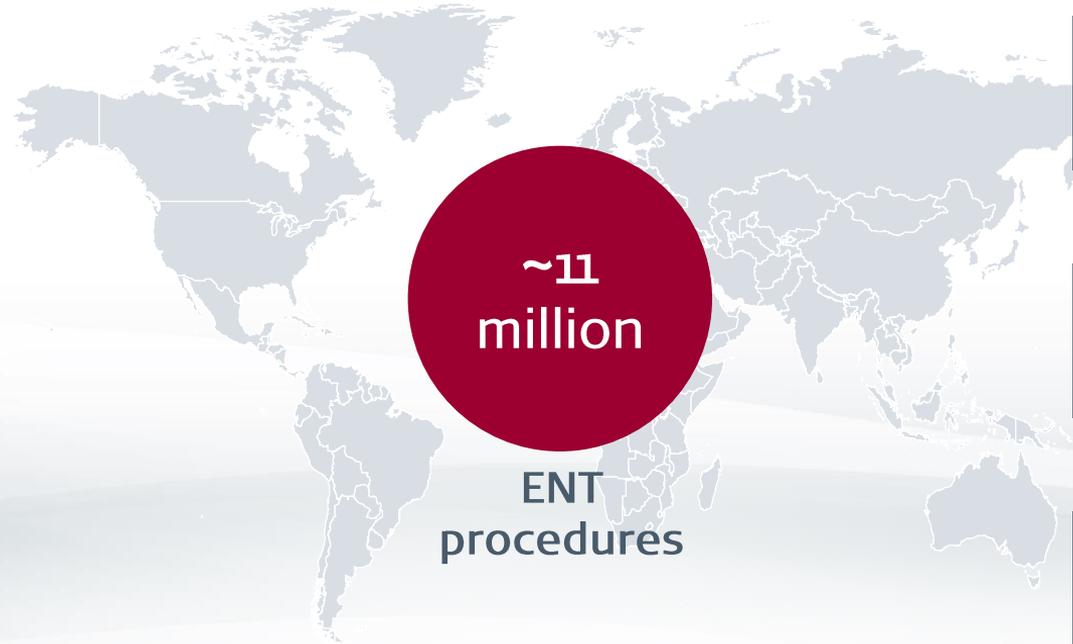
Two new single-use flexible ENT scopes for routine ('Slim') and specialized ('Intervention') procedures



2 + 3 aScope™ 4 RhinoLaryngo targets 11 million procedures in the ENT market

Market size

Current challenges



Stricter cleaning guidelines challenge hospital capacity due to **reprocessing**

Fiberscopes that are used today are fragile, creating repair issues, thus limiting **availability**

Scope handles are not always clean and cleaning **exposes staff** to hazardous chemicals

2 + 3 aScope™ 4 RhinoLaryngo is the simple way to improve productivity and safety

We solve all three challenges

Eliminate reprocessing

Eliminate reprocessing with very strong benefits in facilities with rigorous cleaning requirements

Increase availability

Eliminate need for repairs and increase availability

Increase safety

aScope is guaranteed sterile, eliminating the risk of cross-contamination and improving safety for patients and staff

aScope™ 4 RhinoLaryngo Slim

 USD 269



aScope™ 4 RhinoLaryngo Intervention  USD 299

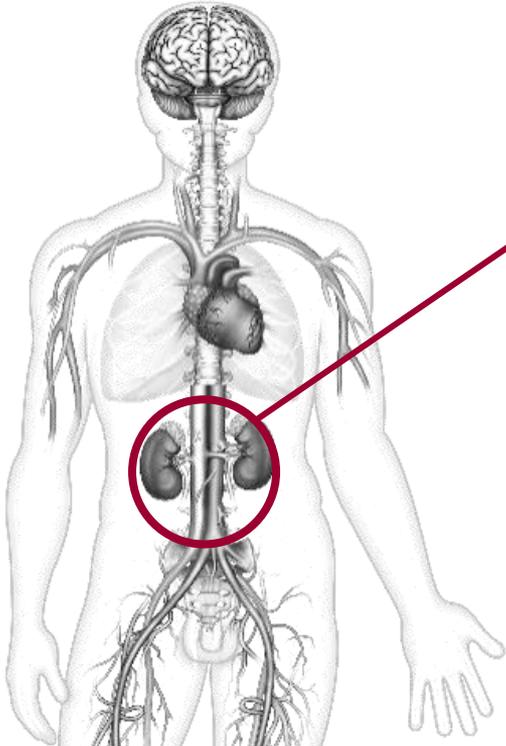


SC210 Colonoscope

4

The single-use colonoscope - SC210

A sterile, single-use colonoscope, which can be used to inspect the colon e.g. to detect cancer or polyps



4 With SC210, we are targeting a 50 million procedure market

Market size



Current challenges

The use of reusable endoscopes creates **infection risks**

Reusables require **resource-demanding** cleaning and infection control

Increasing demands on reprocessing, increased number of needed scopes & thereby **cost in use**

4 SC210 eliminates cross-contamination and reprocessing need, while increasing flexibility

Our solution

Eliminate risk

Eliminate risk of cross-contamination and consequent liability risks

Eliminate reprocessing

Eliminate the need for complex reprocessing setup and logistics

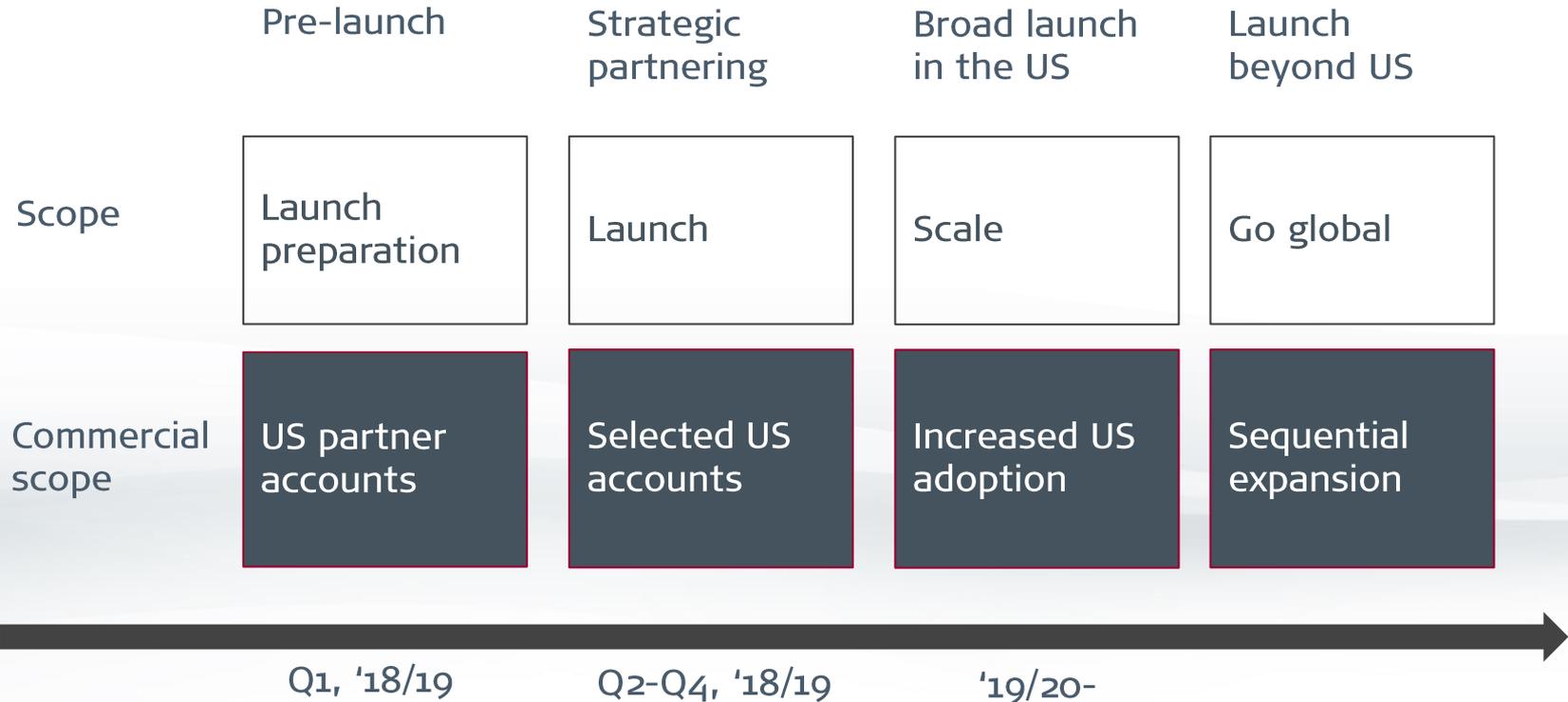
Increase availability

Use where/when needed at low up-front investment, expansion opportunity

 USD 350

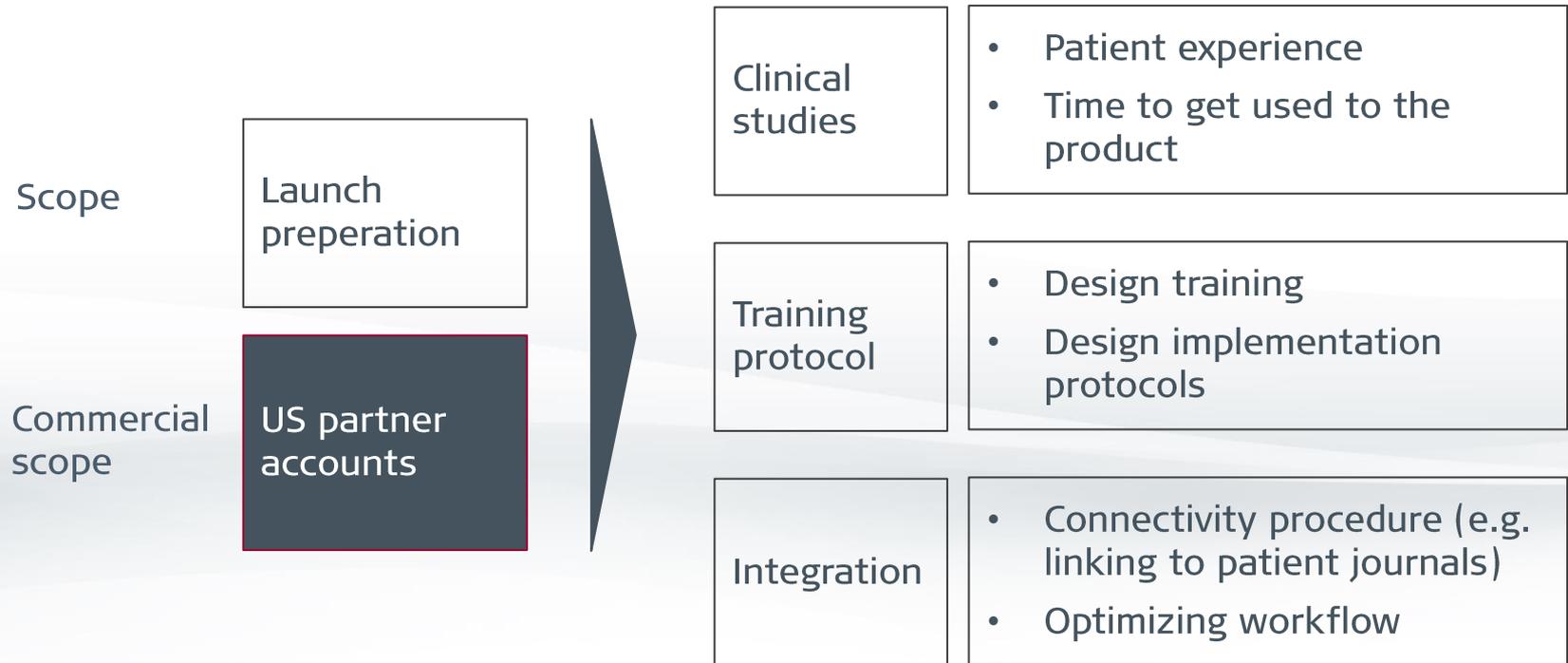


4 We will use the Invendo-based SC210 to pioneer the GI single-use market



4 The trial & learn phase will ensure readiness on a number of parameters

How we will work with our US partner accounts in Q1, 2018/19



Since we acquired Invendo in October 2017 we have worked on two tracks

Prepare SC210 for commercialization

- Got FDA clearance
- Prepared product for transfer to Malaysia
- Transferred production to Malaysia
- Preparation of launch package
- Preparation of single-use hospital partners for scope use initiation

We will launch the SC210 Colonoscope in the US in Q1 2018/19

Develop the full GI portfolio

- Combined Invendo&Ambu platforms
- Set up GI scope development projects
- Initiated development projects
- Secured suppliers
- Prepared for scalable production in Malaysia
- Tests on duodenoscope ongoing

We will launch the duodenoscope and gastroscope within the strategy period



Sneak peak - aScope Duo

With the duodenoscope we will be targeting 2 million procedures

Market size



Current challenges

Reusable endoscopes – especially duodenoscopes – require cumbersome and costly cleaning procedures

Outbreak of superbugs with reusables have led to several deaths, raising requirements for infection control

Lengthy reprocessing requires increase in scope volume needed

The single-use duodenoscope will eliminate cross-contamination and reprocessing needs

Our solution

Eliminate risk

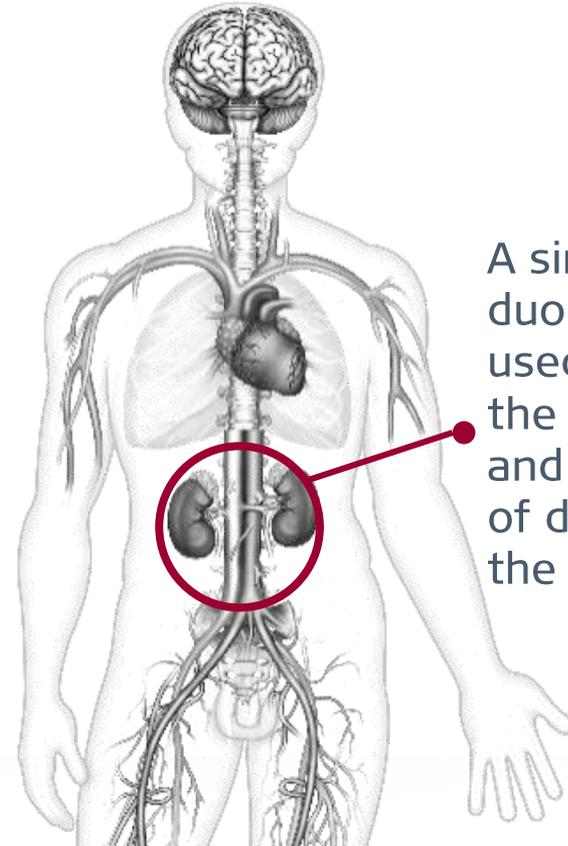
Eliminate risk of cross-contamination and consequent liability risks

Eliminate reprocessing

Eliminate the need for complex reprocessing setup & logistics

Ensure availability

Ensure availability without increasing cost in use



A single-use duodenoscope, used to assist in the diagnosis and treatment of diseases in the gall bladder

Any questions?

Q&A



Break



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Financial results for 2017/18 will be as stated at Q3

Financial guidance for 2017/18

Organic revenue growth

~ 15%

EBIT margin

21-22%

FCF

~ DKK 300 M

Endoscope unit sales

~ 550.000

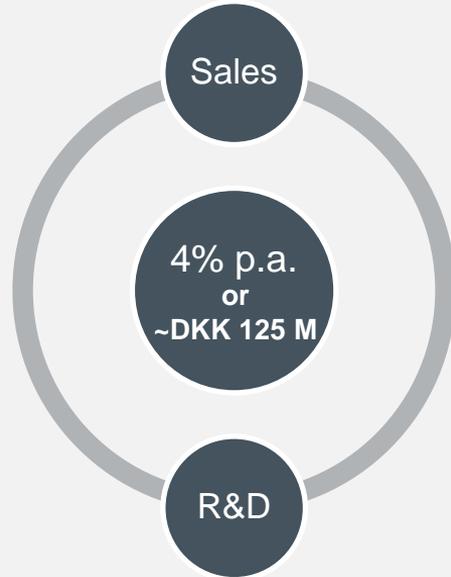
**As stated
at Q3**

Key drivers for the year

- Strong Core growth contributed by all Regions
 - Visualisation penetration continues and we will grow volumes by more than 50%
 - Effective operational performance
 - Profitable growth
-

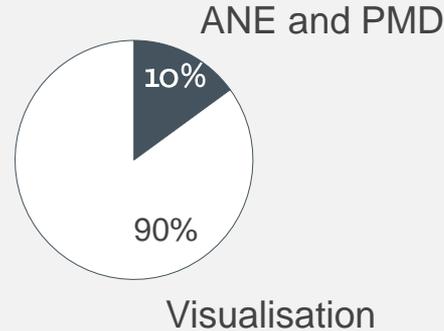
Towards 2020 we will continue to invest significantly in R&D and Sales while expanding profitability and cash flows

Investment % p.a. relative to revenue



Investment in R&D and Sales will be ~4% p.a. of revenue towards 2020

R&D spend by business area



R&D spend outside visualisation is merely product maintenance

Investment rationale

- Our growth requires significant investments in R&D and Sales
- Our salesforce has been split and 90% of R&D investments now goes into Visualisation
- Fresh money in the range of ~4% p.a. is being added towards 2020
- In-sourcing of core products to support overall portfolio

In FY 2018/19 we will be above plan with double-digit growth and further profit expansion

Financial outlook for 2018/19

Financial outlook	Financial year 17/18	Financial year 18/19
Organic revenue growth	~ 15%	15-16%
EBIT margin	21-22%	22-24%
Free cash-flow	~ DKK 300m 11-12% of revenue	~ DKK 400-475m 14-15% of revenue
Endoscopes sold (unit)	~ 550.000	+ 750.000



Key focus in FY 18/19

- Continued high growth contribution from our existing endoscopy portfolio
- Revenue impact from product launches announced today
- Endoscope unit sales of + 750,000
- Total CAPEX of ~8% of revenue

Last year we provided an ambitious 2020 outlook

2020 financial guidance

- Revenue CAGR of 13-15%
- EBIT margin of 24-25% i.e. ~2%-pts p.a.
- FCF at ~18% of revenue

Scopes unit sale

- More than 1.000.000 scopes sold in 2020

Visualisation share

- +50% of revenue will be from visualisation in 2020

M&A

- An M&A focus to support our single-use vision

Status by end of 2017/18

- Invendo was acquired ultimo October 2017
- Invendo is a technology platform that enables our full GI portfolio by end of 2020
- Organic growth and EBIT margin is above plan
- Significant investments required to support growth

Today we raise our 2020 outlook to reflect the potential we now see

Updated 2020 outlook

Ambu 2020 guidance	4 October 2017	4 October 2018
Organic revenue CAGR (2017-2020)	13-15%	16-18%
EBIT margin in 2020	24-25%	26-28%
Free cash-flow (% of revenue)	~ 18%	~ 18%

Growth targets comprise our existing product range including GI

Ambu raises 2020 outlook

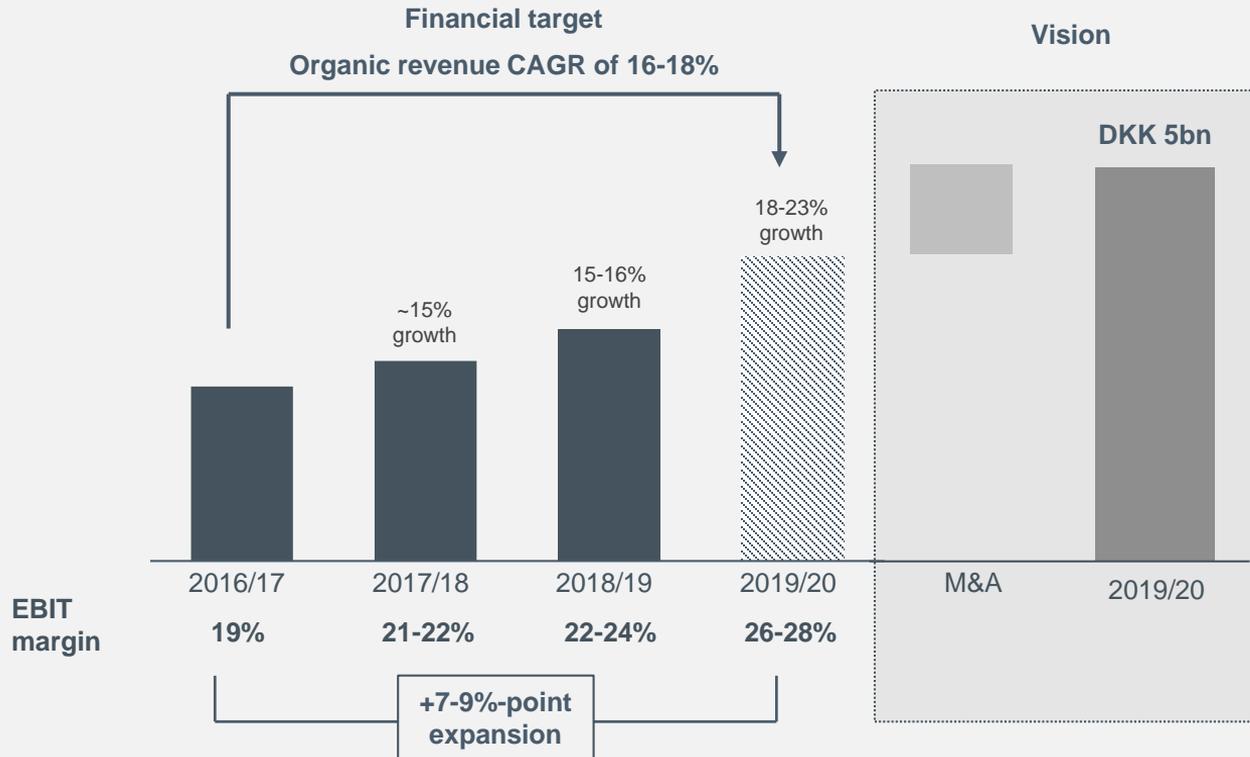
Revenue
CAGR
raised to
16-18%

EBIT
margin
raised to
26-28%

- Visualisation will be ~50% of revenue
- We expect to sell + 1 million endoscopes

Our 2020 financial target

Revenue and EBIT margin development



Organic value creation

- Ambu has a unique position to create significant organic value towards 2020 and beyond
- This is our first priority and we will not engage in transactions that disturbs this position

2020 vision of DKK 5bn

The DKK 5bn is a vision that requires further acquisitions. We will execute on M&As that:

1. Support our single-use vision
2. Will not derail our agenda beyond 2020



Annual Report 2017/18
(Earnings release)

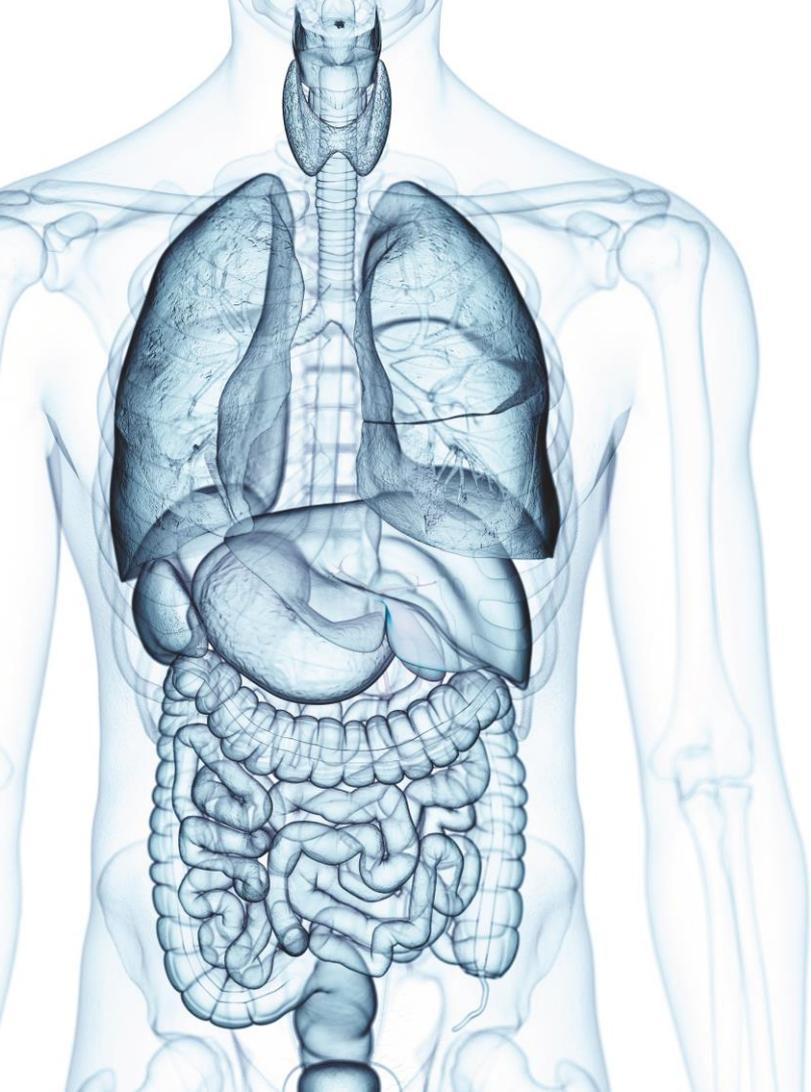
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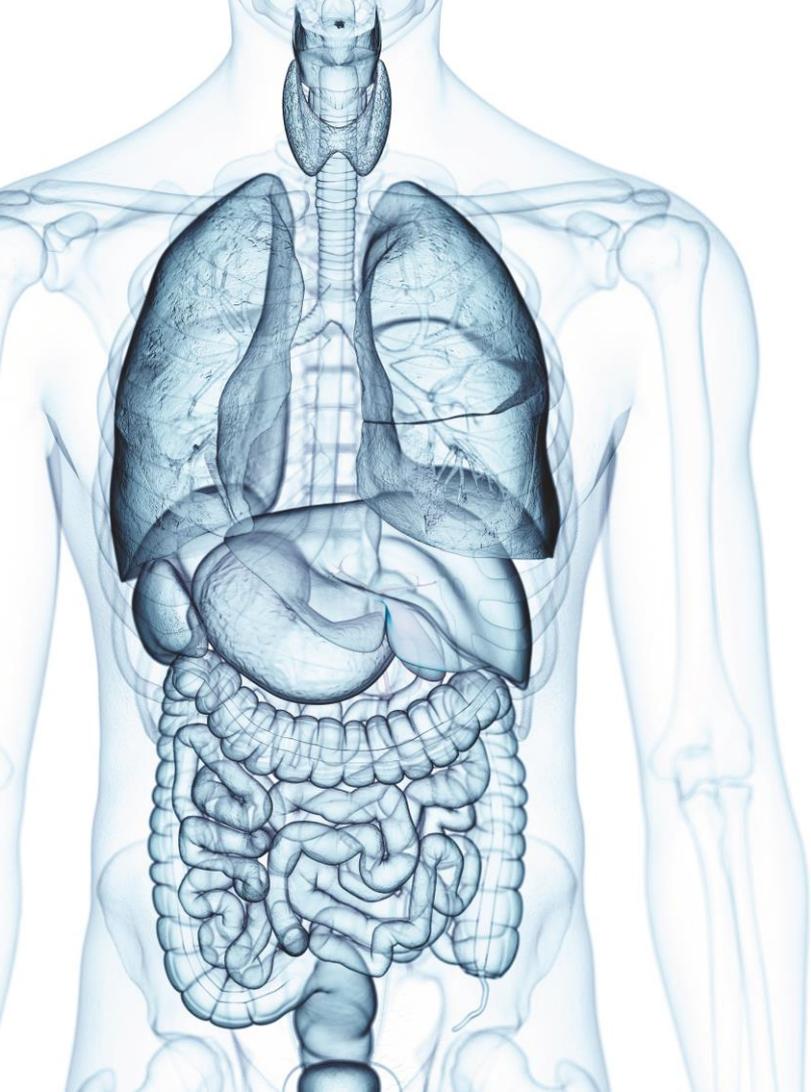
Any questions?

Q&A





Thank you
for listening



Capital Markets Day

2018

Lars Marcher, CEO

Michael Højgaard, CFO

Ballerup, 4 October 2018