

Duodenoscope Associated Infection Rate Post ERCP

Rawen Kader

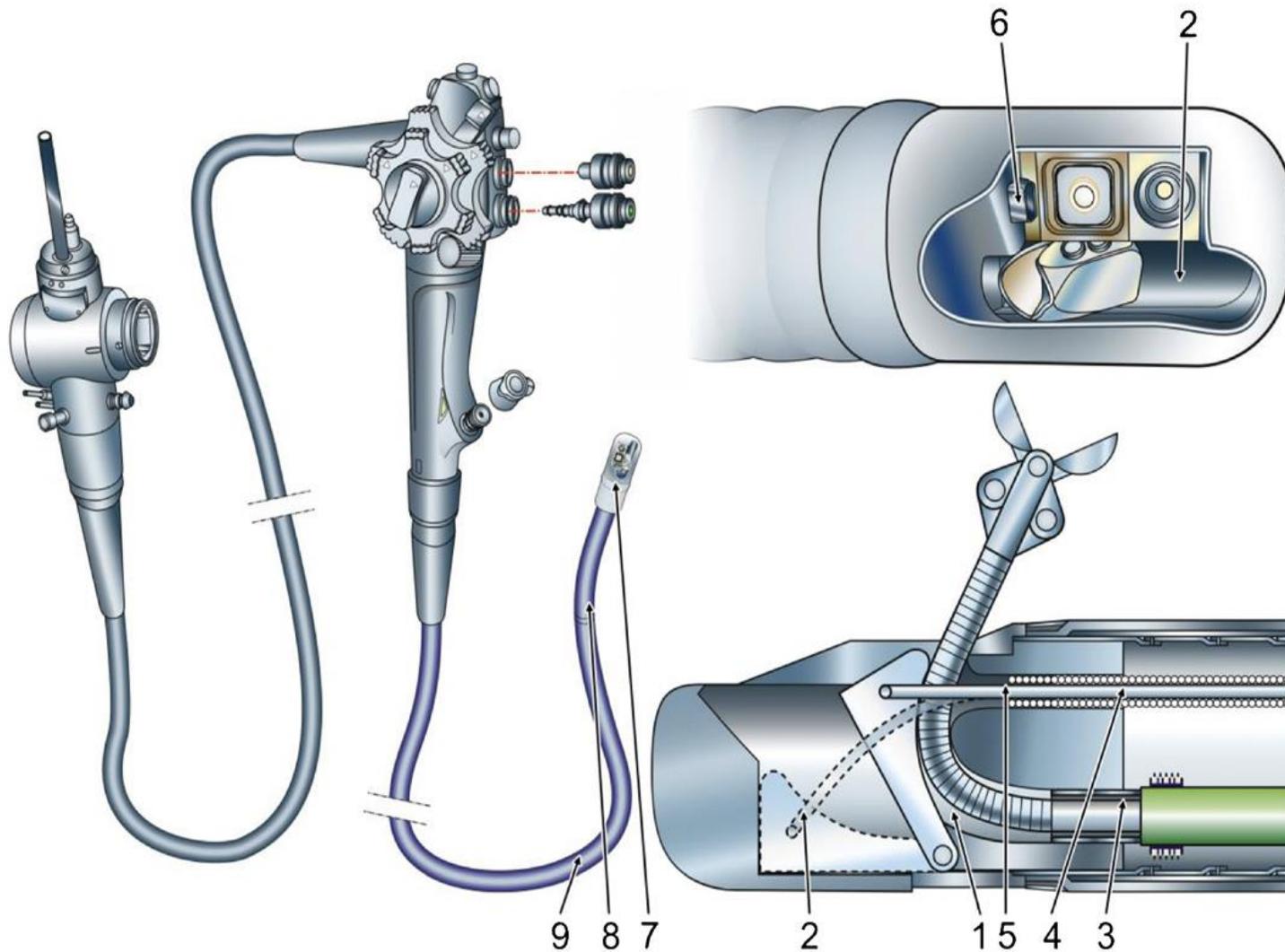
Central Study Team

Trainees

- Dr Rawen Kader (UCLH)
 - Dr Emmanuel Selvaraj (Oxford)
 - Dr Gio Sheiybani (Gloucester)
 - Dr Suneil Raju (Sheffield)
 - Dr Robin Baddeley (Kings)
 - Dr Kushala Abeysekera (Bristol)
-
- Supported by consultants (R.Matull, E.Wesley, S.Shaji, Bu Hayee)

Duodenoscope Associated Infection (DAI)

- Duodenoscope associated infection (DAI) = infections due to the transmission of pathogens via contaminated duodenoscopes
- DAI rate =
$$\frac{\text{the number infected patients (total DAI)}}{\text{all exposed patients (total ERCP)}}$$



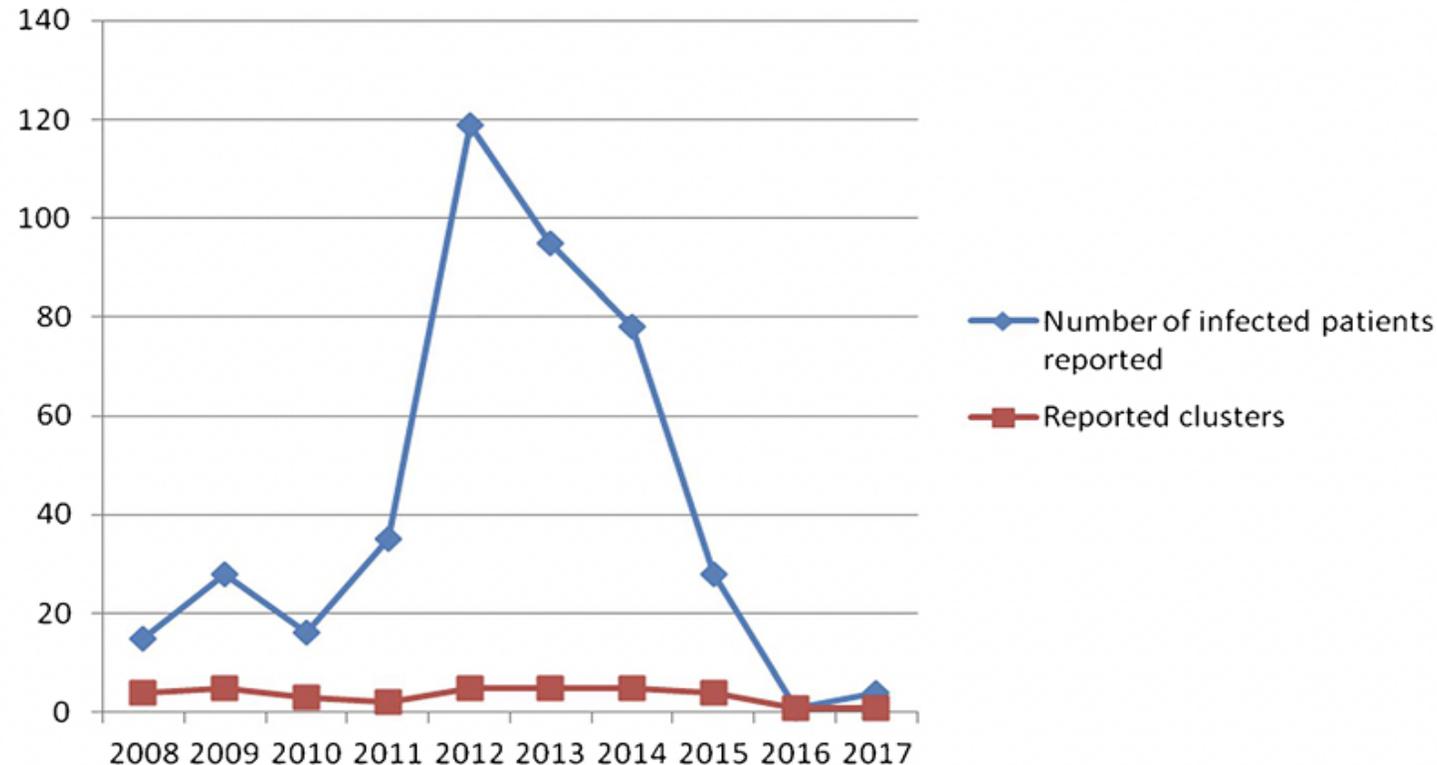
- (1) channel port side of elevator
- (2) recess under the elevator
- (3) biopsy channel;
- (4) elevator channel;
- (5) O-ring sealing of the elevator channel;
- (6) air-water channel;
- (7) distal cap;
- (8) distal tip of the scope;
- (9) coating polymer of the flexible scope

Duodenoscope associated colonisation

<u>Endogenous</u>		<u>Exogenous</u>	
<u>Gastrointestinal flora</u>	<u>Oral flora</u>	<u>Skin flora</u>	<u>Waterborne flora</u>
Yeasts	Moraxella spp.	Bacillus spp	Stenotrophomonas maltophilia
Klebsiella pneumoniae	Streptococcus salivarius	Micrococcus luteus	Acinetobacter spp.
Enterobacter cloacae	Moraxella osloensis	Staphylococcus epidermidis	Agrobacterium radiobacter
Escherichia coli	Streptococcus mitis	Kocuria spp.	Paracoccus yeeii
Klebsiella oxytoca	Neisseria flavescens	Staphylococcus hominis	Achromobacter xylooxidans
Enterococcus faecium	Rothia spp	Staphylococcus warneri	Alternaria spp
Enterococcus faecalis	Streptococcus mutans	Kocuria rhizophila	Pseudomonas monteilii
Pseudomonas aeruginosa	Streptococcus oralis	Micrococcus spp	Pseudomonas putida
Staphylococcus aureus (methicillin sensitivity)	Streptococcus oralis	Staphylococcus auricularis	Sphingomonas paucimobilis
Staphylococcus aureus (methicillin resistant)	Streptococcus spp	Staphylococcus spp. (CNS)	Rhizobium spp.
			Sphingobium spp.

Implications of single-use duodenoscopes

- DAI estimates between 0.01% –1%,



Implications of single-use duodenoscopes

- FDA post market surveillance → duodenoscope associated contamination rates = up to 5.4%
- Reusable duodenoscope per/procedure = US\$612
- Single-use duodenoscope cost = US\$2500–US\$2900
- Single-use duodenoscope releases 29.3kg of CO₂, over 20 x emissions generated from reusable duodenoscopes
- >50,000 ERCPs in the UK annually

AIM

Audit to calculate reusable duodenoscopes DAI rate associated with ERCP over a 5-year period (1st December 2016 to 1st December 2021)

Objectives

Primary objectives:

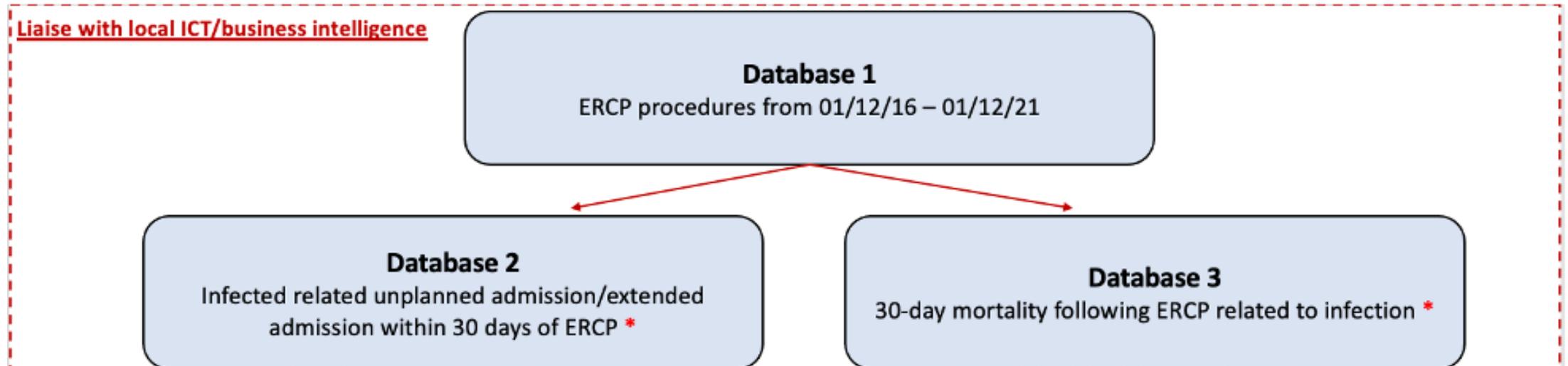
Identify the 8-day DAI rate for reusable duodenoscopes in ERCP

Secondary objectives:

- a) The 30-day DAI rate for reusable duodenoscopes in ERCP.
- b) The associated length of stay for DAI related admissions.
- c) 30-day DAI related mortality rate following ERCP.

PHASE I – DATABASE CURATION

- Only interested in new infections post ERCP within 30 days



- Contact your endoscopy lead to provide local contact for ICT/business intelligence
- Send template email and ICD-10 codes (provided)

ICD-10 code	Description
A00-B99	Infectious and parasitic diseases
<i>Inflammatory diseases of the central nervous system</i>	
G01	Bacterial meningitis
G02	Meningitis due to other organisms (fungi, virus, trypanosomiasis)
G04-G05	Encephalitis, myelitis, and encephalomyelitis
G04.0	Infectious acute disseminated encephalomyelitis (ADEM)
<i>Diseases of the circulatory system</i>	
I33	Acute and subacute bacterial endocarditis
I39	Acute and subacute infective endocarditis in diseases classified elsewhere
<i>Diseases of respiratory system</i>	
J00-J06	Acute respiratory infections
J09-J18	Pneumonia and influenza
J90	Pleurisy with effusion, with mention of a bacterial cause other than tuberculosis
J13-J15	Pneumonia due to other specified bacteria
J15.9	Bacterial pneumonia, unspecified
J16	Pneumonia due to other specified organism
<i>Diseases of digestive system</i>	
K83.0	Cholangitis
K61	Abscess of anal and rectal regions
K65.0	Peritonitis and retroperitoneal infections
<i>Diseases of genitourinary system</i>	
N15.9	Infections of kidney
N39.0	Urinary tract infection
<i>Supplementary classification of factors influencing health status and contact with health services</i>	
U82-U84	Infection with drug-resistant microorganisms

PHASE I – DATABASE CURATION

Dear [insert ICT or business intelligence name],

I am one of the gastroenterology registrars at [insert hospital site name]. I am working with Dr [insert endoscopy lead/lead consultant name] on an audit which requires curating three databases which we were hoping you would be able to kindly help us with. The three databases we would require your kind help with are:

Database 1

To identify all adult patients (aged 18 or above) who have undergone an ERCP procedure at [insert hospital site name] within the period of 1st December 2016 to 1st December 2021. Alongside the list of patients, we would require the date of each patients ERCP procedure.

Database 2

To identify patients from database 1 with a hospital admission at [insert hospital site name] within 30 days of the date of their ERCP procedure. We are only looking for admissions that have been coded with an ICD-10 code for infection (I can provide the list of ICD-10 codes we are looking for).

This database will be required between the period 1st December 2016 to 31st December 2021.

Database 3

To identify patients from database 1 that have died within 30 days of their ERCP procedure. This database will be required between the period 1st December 2016 to 31st December 2021.

Would you be able to kindly help us with this please?

PHASE II – DATA COLLECTION

I. Patient-level data

- co-morbidities
- parameters of infection (fever, WCC, Plt, Bili)
- positive microbiology

II. Procedural factors

- ERCP Indication
- Success of ERCP (e.g. clearance of ducts)
- Difficulty of the procedure as per Schutz classification

PHASE III – LOCAL TEAM CONSENSUS

I. Potential DAI:

- Plausible organism for DAI **and** no conceivable alternative aetiology or focus of infection
- There is the absence of positive microbiology cultures but natural history in keeping with a true infection that is plausible for a DAI and no conceivable alternative aetiology or focus of infection

II. Following are not considered a DAI:

- Organisms identified following ERCP which are the same organism identified pre/intra-procedurally
- Infection arising from the ERCP procedure itself (e.g. biliary sepsis following only partial clearance)
- Biliary sepsis secondary to an intra-luminal (e.g. stones or cholangiocarcinoma) or extra-luminal obstruction (e.g. cancer)

Why become involved?

- Co-authorship for all involved
- Trainee networks offered equal weighting
- Offers opportunity for the first trainee network collaboration to have a real-impact

OVERVIEW

