



IEQAS Annual Participants' Conference

25 Years of IEQAS



Dublin
4th October 2006

“The past is a foreign place; they do things differently there.”

The opening line of L. P. Hartley's *'The Go-Between'*

A SURVEY OF THE ACCURACY OF CHEMICAL ANALYSES IN CLINICAL LABORATORIES*

WILLIAM P. BELK, M.D.,† AND F. WILLIAM SUNDERMAN, M.D.†

In 1946 the Committee on Laboratories of the Medical Society of the State of Pennsylvania proposed a survey† to check the accuracy of some of the more common chemical measurements made in hospital laboratories throughout the state. It undertook to do this by distributing solutions which had been carefully

TABLE 1
NUMBER OF DETERMINATIONS CLASSED AS SATISFACTORY, UNSATISFACTORY
AND GROSS ERROR
September Analyses

SUBSTANCE TESTED	SATISFACTORY LIMITS OF RESULTS PER 100 ML.	NUMBER SATISFACTORY	NUMBER UNSATISFACTORY**	GROSS ERROR**
Hemoglobin.....	9.8 ± 0.3 gm.	17	34	11
Hemoglobin.....	15.1 ± 0.5 gm.	21	31	3
Glucose.....	60 ± 10 mg.	33	19	5
Glucose.....	375 ± 30 mg.	27	24	4
Sodium chloride.....	456 ± 50 mg.	30	14	2
Total protein.....	6.6 ± 0.4 gm.	18	29	7
Albumin.....	4.6 ± 0.3 gm.	9	35	7



THE NEW
NATIONAL
HEALTH
SERVICE

Your new National Health Service begins on 5th July. What is it? How do you get it?

It will provide you with all medical, dental, and nursing care. Everyone—rich or poor, man, woman or child—can use it or any part of it. There are no charges, except for a few special items. There are no insurance qualifications. But it is not a "charity". You are all paying for it, mainly as taxpayers, and it will relieve your money worries in time of illness.

Concern for the quality of patient care was an important factor leading to the establishment of the NHS in the UK in July 1948



Photo: BMJ

**Aneurin Bevan,
Secretary of State for Health;
Second Reading of the NHS Bill, House of
Commons, 30th April 1946.**

The new NHS was designed to:

"Universalise the best"

***"Provide the people of Britain, no matter
where they may be, with the same
level of service"***

Post Second World War Changes In Business Practices in Japan

Huge effort to rebuild Japanese economy

- Initiation of a quality movement in 1946
- Quality Control Research Group, 1949
- US management consultant, Deming, appointed as advisor
- Deming: *Quality has many scales. Use statistics to measure performance in all areas.*

- By 1965 , the NHS Pathology Laboratories were the first to consider setting in place measures to achieve consistency of results across hospitals and regions.
- The published literature on quality assurance in healthcare is almost all from the years after 1980.
- The consumerist model of healthcare began to emerge in the 1990s.

1965: First National Inter-Laboratory Trial in the UK

- 175 clinical laboratories analysed two freeze-dried serum specimens and an aqueous solution for urea, sodium, potassium, and phosphate
- Wide variability between laboratories
- Variability attributed to differences in standards, reagents, instrumentation

Ann Clin Biochem 1969; **6**: 126-133



Photo: ACB

July 1969: Launch of the UK's NEQAS for Clinical Biochemistry

- Led by Professor Tom Whitehead
- Operated from Queen Elizabeth Hospital Birmingham
- Funded by Department of Health
- Participation voluntary and free
- Results confidential, anonymity guaranteed

Growth of the UK's NEQAS

- Multiple schemes covering virtually all laboratory medicine
- Establishment of NEQAS Advisory Panels representative of the professional bodies
- Poor performers dealt with “effectively, with discretion and without legislation”

J Clin Pathol 1981; **34**: 947-957

Genesis of EQA for Ireland

- 1) By 1980 the lack of a national EQA scheme was noted by the Department of Health
- 2) Of the 54 publicly funded hospital laboratories, 42 were members of UK or commercial EQA schemes

Genesis of EQA for Ireland

- 3) National Board for Science and Technology formed an EQA Steering Committee representative of the three professional bodies (AMLS, ACBI, RCPI) and the NBST in November 1980
- 4) The Committee was asked to plan and oversee a national EQA, commencing with biochemistry in 1981

Genesis of EQA for Ireland

- 5) The expertise of Barry McSweeney of the NBST was crucial to the launch of a national EQA scheme for Ireland:
 - e.g. his previous work with Prof Whitehead and David Bullock in Birmingham and his role in setting up the Dade European Commercial QAP
- 6) The scheme would be funded (initially) and staffed by the NBST, with the NBST's computer used to process the results

IEQAS Steering Committee 1980 - 1986

Barry McSweeney (Chairman)

Rory O'Moore

John Brady

Barry Duggan

Ned Barrett

John McManus replaced Barry McSweeney as
Chairman during this period

Main Features Of IEQAS (1981)

- 1) Launched with clinical chemistry scheme
- 2) Monthly distribution
- 3) Operated on confidential basis with anonymity guaranteed
- 4) Participation free of charge and voluntary
- 5) High level of participation (53 of 54 labs)

Main Features Of IEQAS (1981)

- 6) Non-parametric outlier elimination
- 7) Scoring and ranking based on variance index
- 8) Cumulative analysis of results
- 9) Six-monthly reports with review and commentary
- 10) Representatives of professional bodies on Steering Committee

**First IEQAS Distribution:
mid-May 1981**

**First reports and official
launch of scheme:
early June 1981**

MMWR™

Morbidity and Mortality Weekly Report

Issue of 5th June 1981

Mysterious disease without identifiable cause.
Five cases described.



Image: IBM

12th August 1981

IBM announced the launch of a new computer “the personal computer”

The company expected to sell 250,000 personal computers in the following five years



IRISH EXTERNAL QUALITY

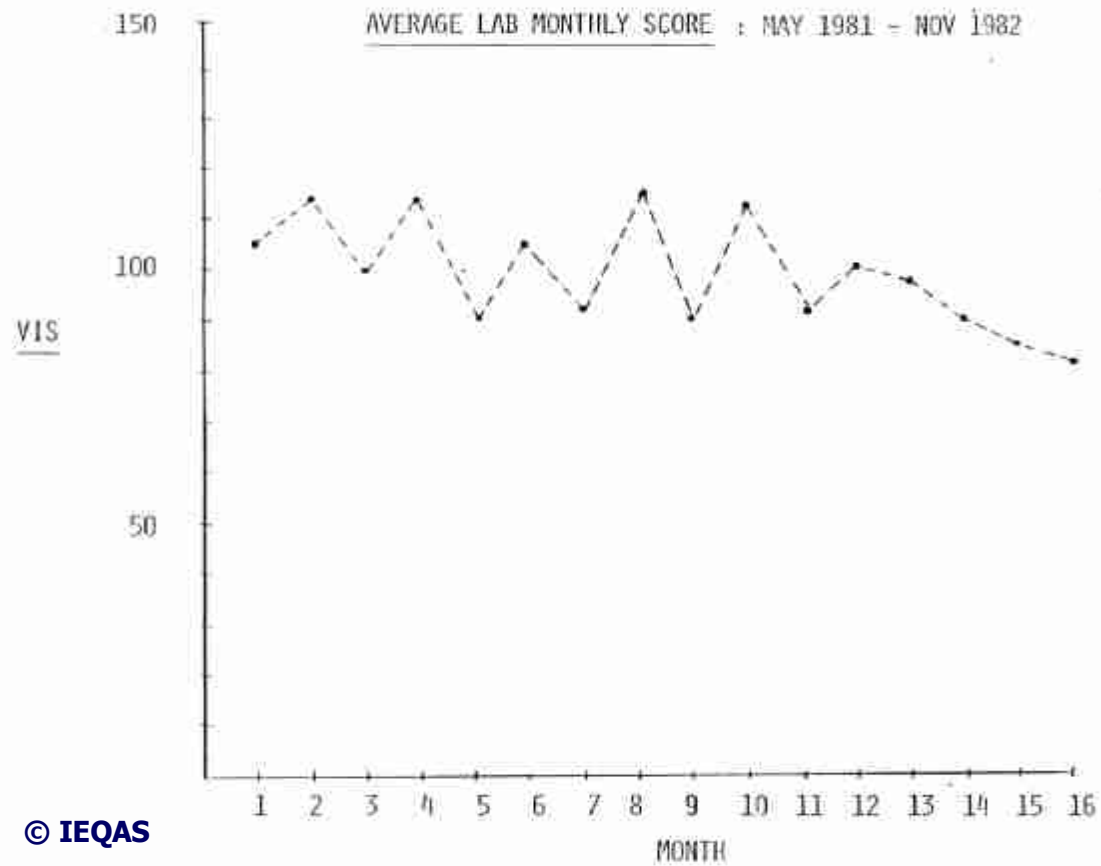
ASSESSMENT SCHEMES

National Board
for Science and
Technology

Bórd Náisiúnta
Eolaíochta agus
Teicneolaíochta

Sheilbourne House,
Sheilbourne Road,
Dublin 4, Ireland.
Telephone: Dublin
(01) 683311
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30327 NBST EI

**NATIONAL EXTERNAL
QUALITY ASSESSMENT SCHEME
IN
CLINICAL BIOCHEMISTRY**

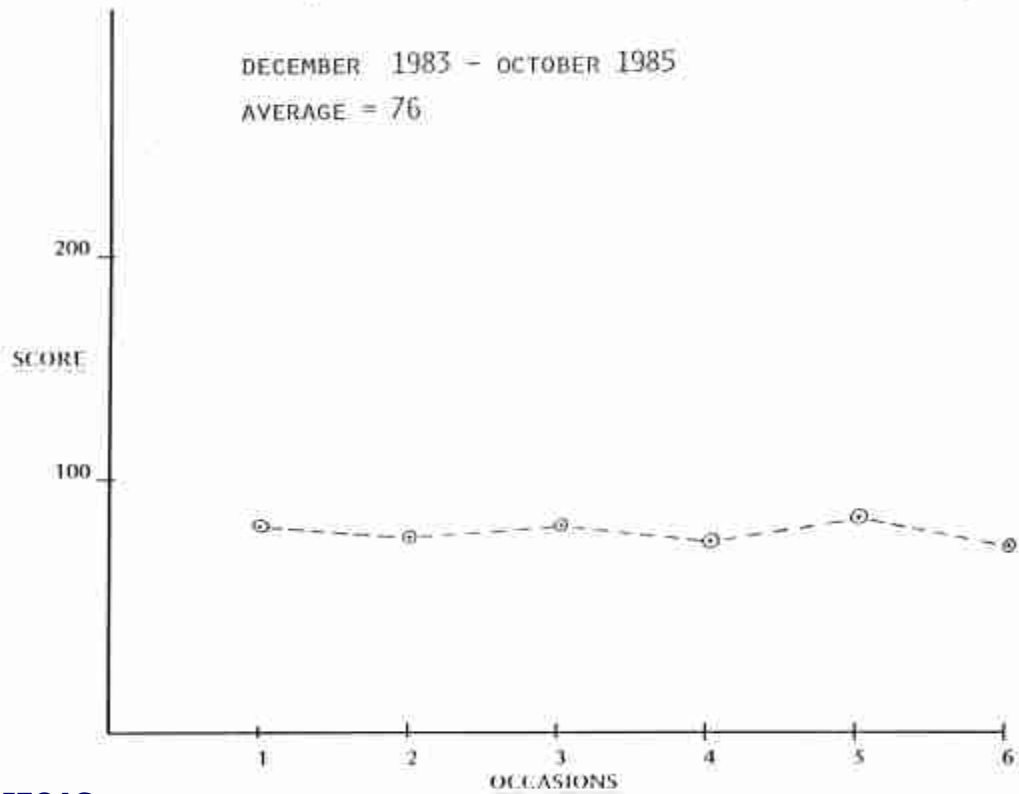


LABORATORY NO: AVERAGE LABORATORY

AVERAGE MONTHLY OCCASIONAL HIDDEN SCORES

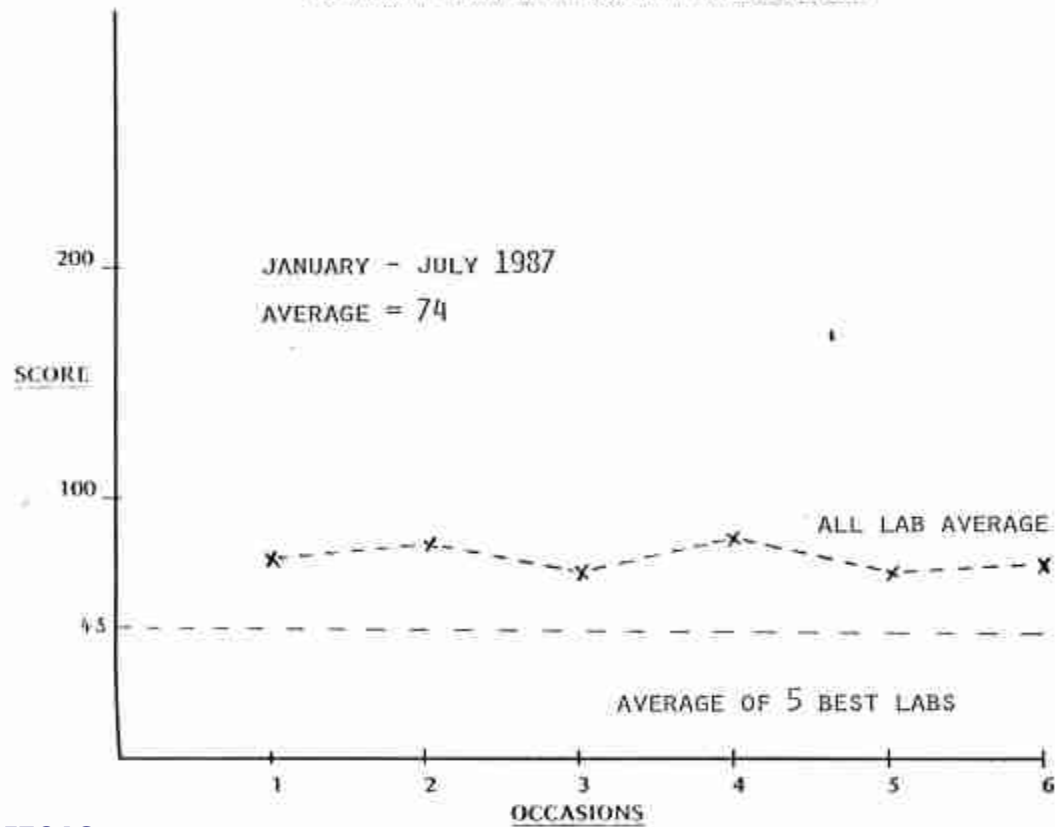
DECEMBER 1983 - OCTOBER 1985

AVERAGE = 76

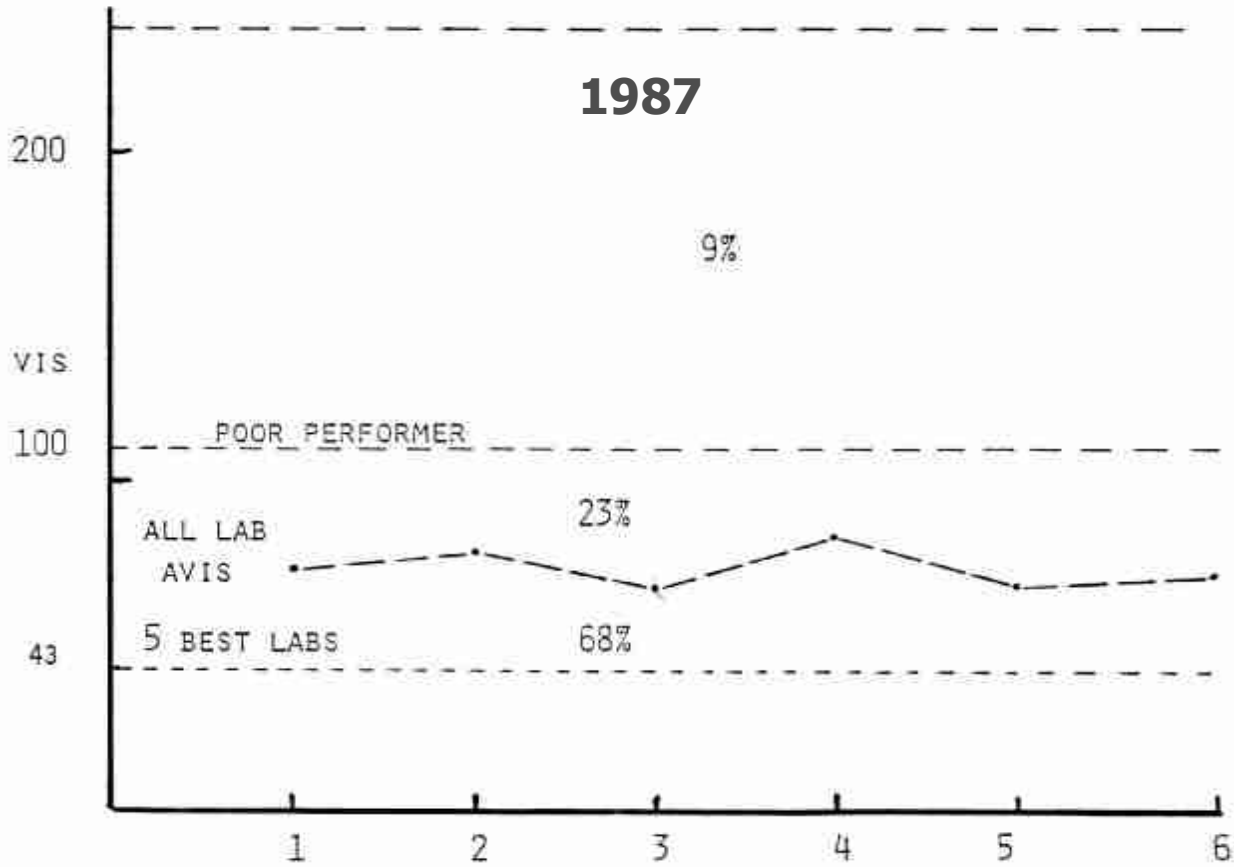


LABORATORY NO: AVERAGE LABORATORY

AVERAGE MONTHLY VARIANCE INDEX SCORES



1987



Best Methods

Worst Methods

Const.	Score	Rank	Const.	Score	Rank
Bili	69	4	T.Prot	196	5
Urate	102	5	Na	257	5
Chol	121	5	Gluc	255	5

Comment

Your overall performance was significantly worse than that of the participants in general.

There is a considerable improvement in Sodium although there still appears to be a slight positive bias.

Poor performance of your Glucose warrants urgent attention. We advise thorough checking of the instrumentation and method.

<u>Best Methods</u>			<u>Worst Methods</u>		
Const.	Score	Rank	Const.	Score	Rank
K	46	3	Gluc	209	5
Na	60	3	Urea	304	5

Comment

Your Sodium and Potassium appear to be well controlled. There is however, a serious negative bias on Glucose estimation. We suggest you check standardization of the instrument. Erratic Urea results may reflect method and/or instrument difficulties which should be investigated.

Best Methods

Const.	Score	Rank
Bili	16	1
K	29	1
Na	41	2

Worst Methods

Const.	Score	Rank
Gluc	68	3
Calc	82	4
Creat	98	4

Comment

Good overall performance, slightly better than that of the average laboratory.

© IEQAS

Best Methods

Const.	Score	Rank
Na	16	1
Gluc	50	2
Creat	51	2

Worst Methods

Const.	Score	Rank
Calc	126	5
Alb	150	5
Urea	238	5

Comment

Overall performance seems to be disimproving. Negative bias at low urea values suggests calibration needs checking.

Best Methods

Const.	Score	Rank
Bili	17	1
Urea	20	1
T.Prot	21	2

Worst Methods

Const.	Score	Rank
Na	50	2
Phos	55	2
Urate	52	3

Comment

Congratulations, you are the top laboratory in the country.

IEQAS Funding Difficulties 1985-1990

- 1) NBST unable to fund scheme beyond 1985
- 2) Scheme operated in a very limited way without funds during 1986
- 3) Funded by grants from Department of Health from January 1987 to April 1990
- 4) Operated by BioResearch Ireland during this period
- 5) Investment in new software during 1989

IEQAS Steering Committee 1987 - 1990

Rory O'Moore (Chairman)

John McManus (Secretary)

Des Kenny

John Brady

Gerry O'Connor

Bill Tormey

Ned Barrett

Department of Health
Hawkins House, Dublin 2



An Roinn Sláinte
Teach Haicín, Baile Átha Cliath 2

TEL (01) 714711 EXTN.
TELEX 33451
FAX 711947
REF.

7 March, 1990

To: Chief Executive Officer; Each Health Board;
Secretary/Manager, Chief Executive; Each Voluntary Hospital.

External Quality Assessment Schemes in Health Service Laboratories

A Chara

April 1990: New Funding arrangement for IEQAS

"There is little doubt but that the existence of the scheme has helped to improve the quality of results and methods in the hospital service and has made an important contribution to the overall quality of care available to patients."

April 1990: New Funding arrangement for IEQAS

"However, the Department feels that it is no longer appropriate that it should continue to fund the scheme directly and has suggested that, as with other schemes, the participating hospital laboratories should now meet the costs of maintaining the scheme."

IEQAS IN THE 1990s

- Transition from operating within BioResearch Ireland to operating independently completed in January 1994
- Appointment of Hazel Graham as Operations Manager in 1992
- IEQAS entirely self funding since 1994
- Increase in number of schemes
- Several special surveys run
- Introduction of Haematology Scheme in 1999 with appointment of Patricia Howley

IEQAS Steering Committee 1992 - 1999

Rory O'Moore (Chairman)

Hazel Graham (Operations Manager)

Des Kenny

John Brady

Niall O'Leary

Gerry O'Connor

Ned Barrett

IEQAS since 1999

- Competitive pressure from other EQA organisations
- Participant fee income contributes to annual running costs but not to development of services
- Increased number of schemes
- Preparation of Business Plan

Achievements In Recent Years

- Office relocation
- Quality Manual
- IT upgrade
- Training of IEQAS staff
- Financial system
- Marketing
- Web submission of results
- Project Manager during 2005
 - Website upgrade
 - Safety and ethics policies
 - Donor consent
 - Development of business plan
 - Future EQA requirements

IEQAS Steering Committee

Individuals who have served for all or part of 2000-2006

Des Kenny (Chairman)

Hazel Graham

Patricia Howley

Gerard Boran

Edmond Smyth

John Brady

Gerry O'Connor

Ned Barrett

Aengus O'Marcaigh

Alan Carr

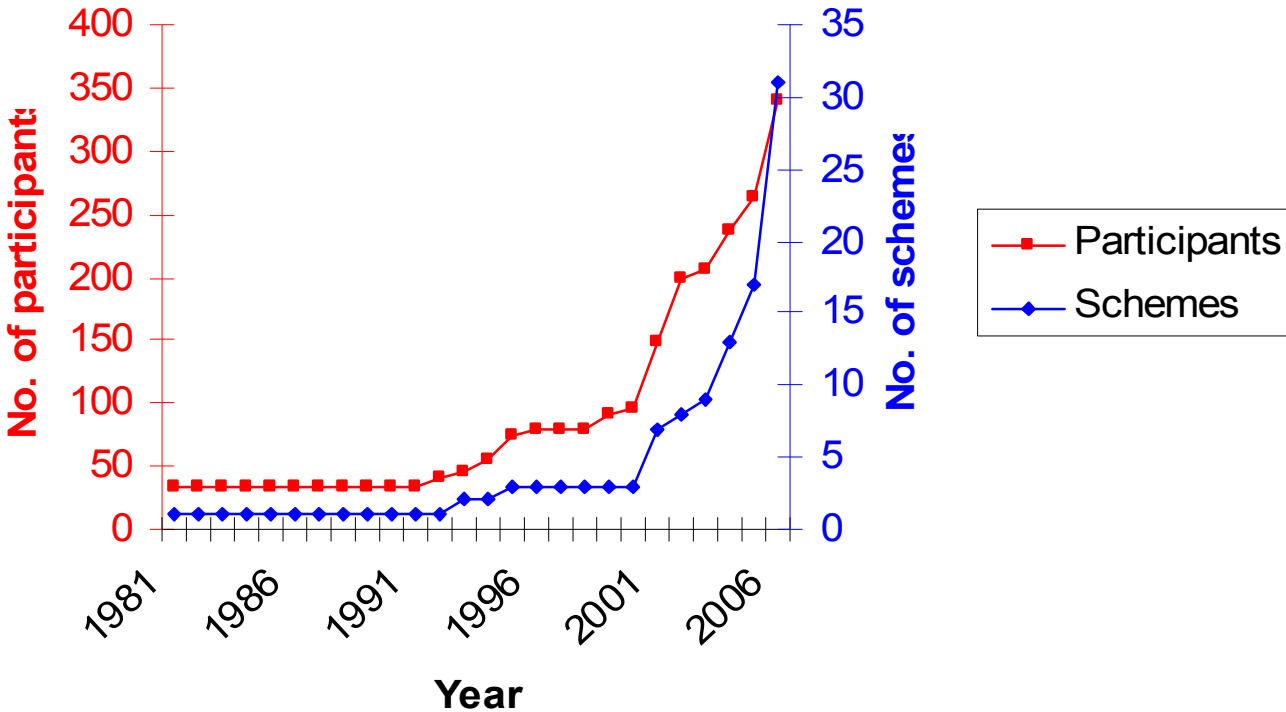
Ivan Shirley

Beatrice Nolan

Niamh O'Sullivan

John O'Leary

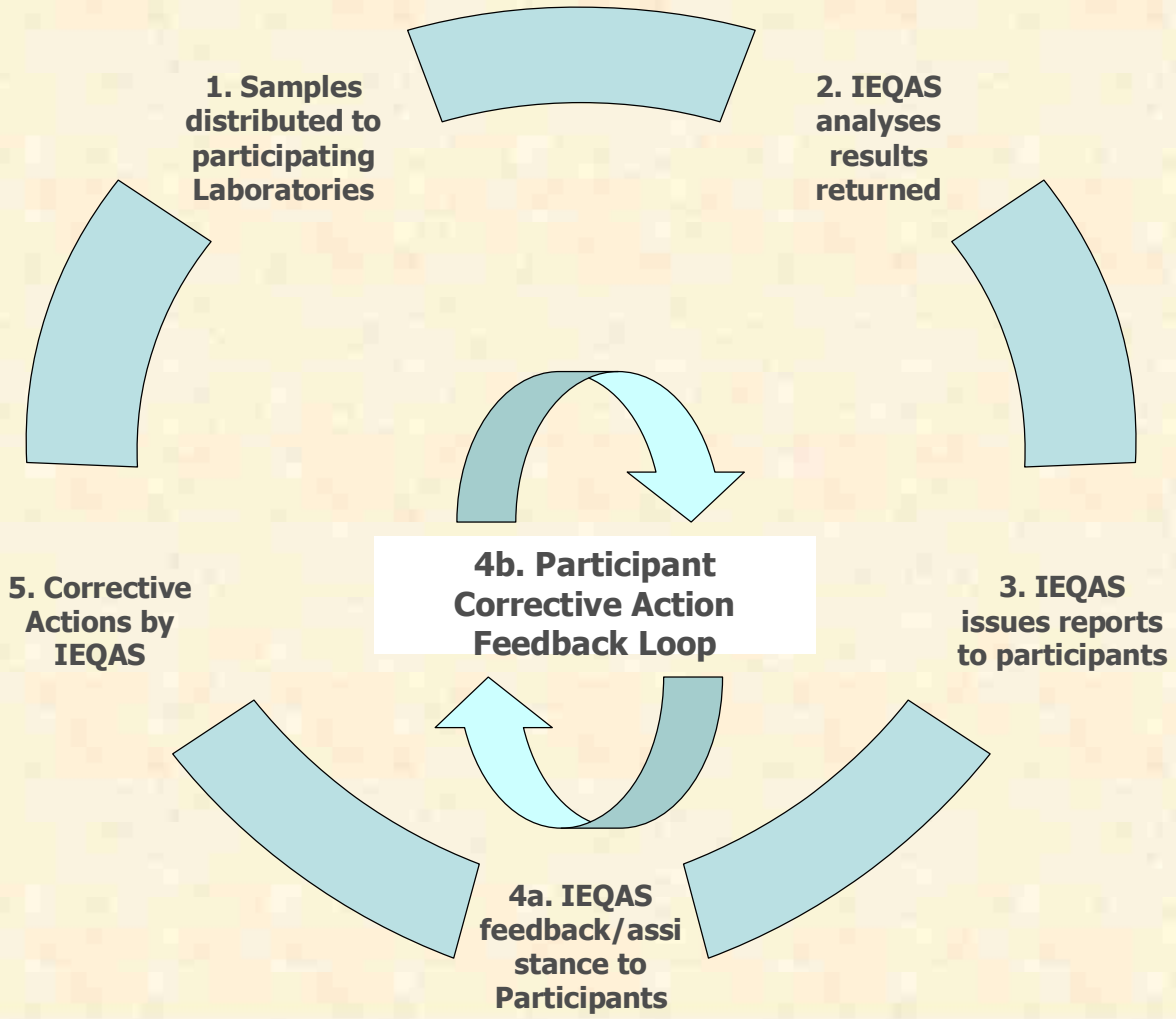
Growth in IEQAS since 1981

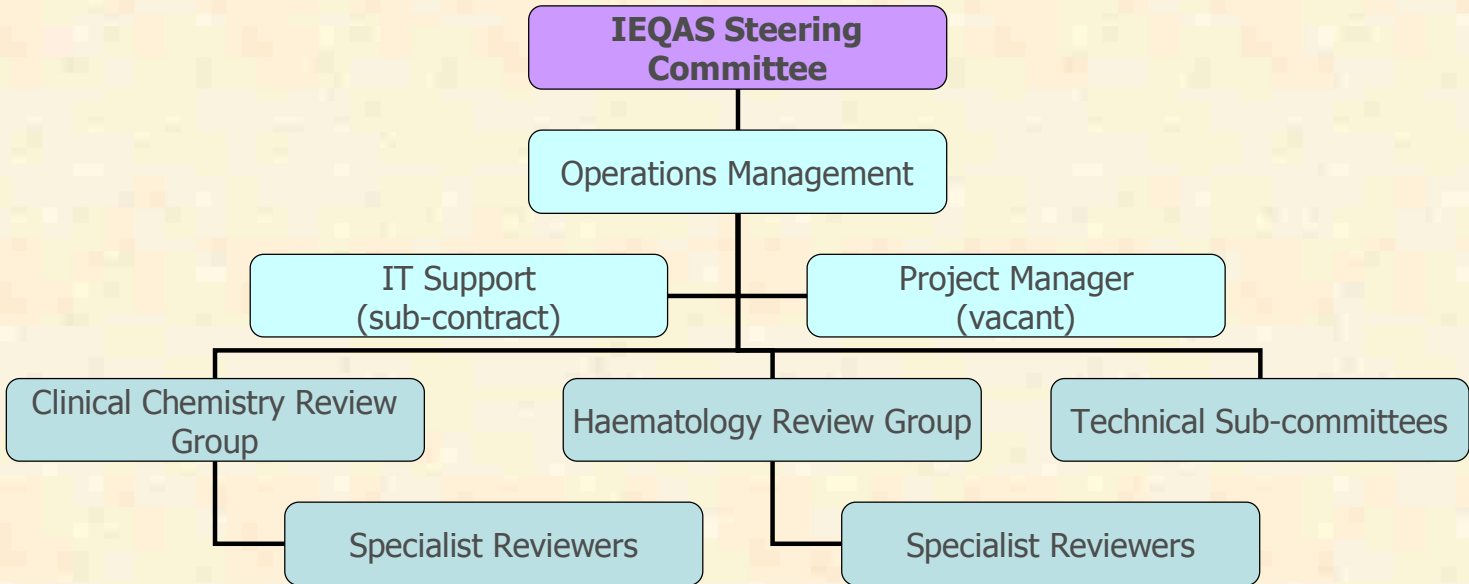


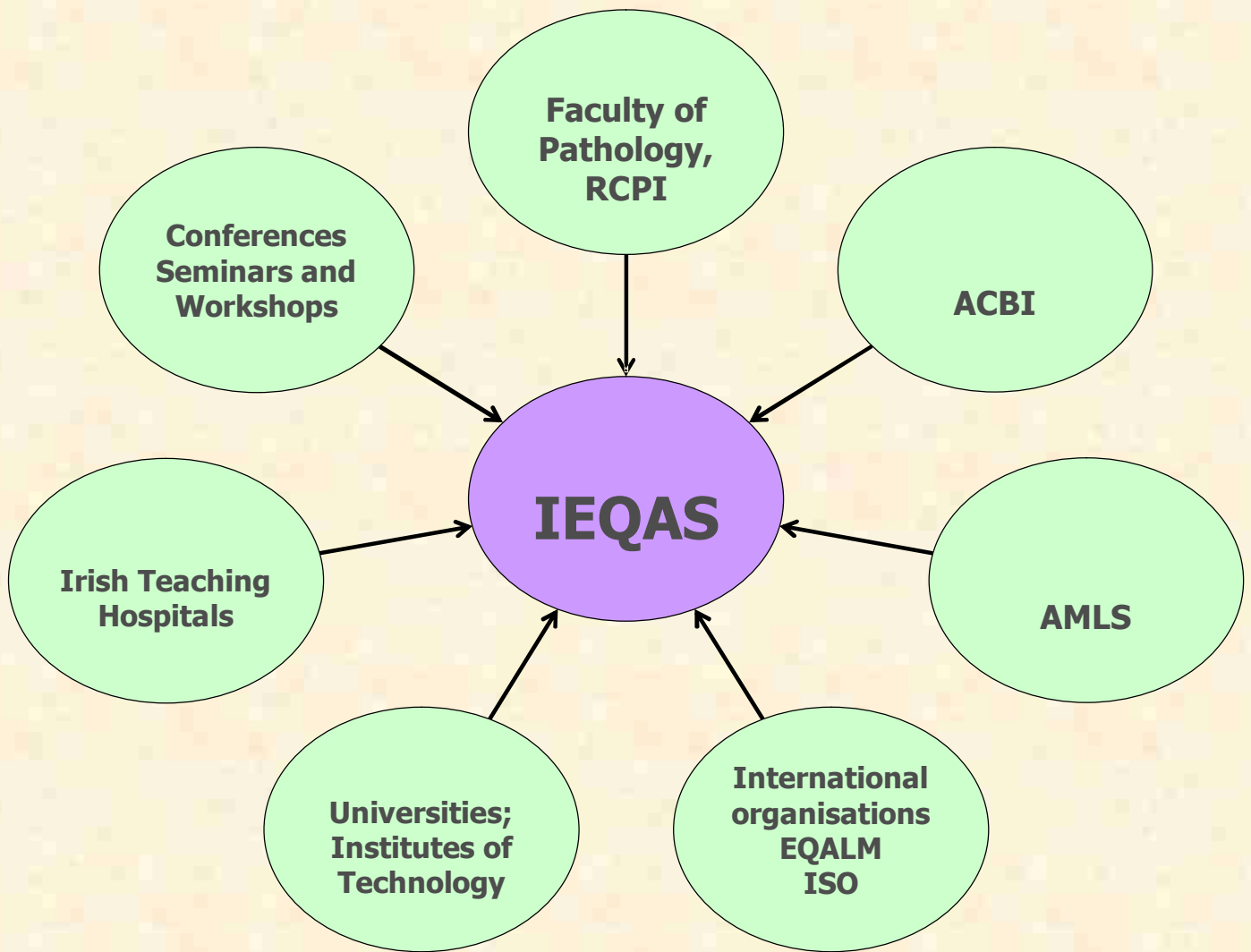
IEQAS established as a legal entity

“IEQAS is a non-trading, non-profit professional association within the Irish hospital service, that monitors the quality of results reported in Irish laboratory medicine, offering professional advice and guidance as necessary. The Scheme is educational rather than regulatory in nature and provides a means of external audit that operates continuously thus helping laboratories to achieve their aim of continuous quality improvement.”

IEQAS Constitution







Effects of analytic bias on number of patients classified as abnormally high per 1000 patients tested

Bias (%)	Serum Cholesterol
	> 5.12 mmol/L
-10%	258
-3%	492
-1%	564
None	603
+1%	638
+3%	704
+10%	894

Effects of analytic bias on number of patients classified as abnormally high per 1000 patients tested

Bias (%)	Serum PSA
	> 4.0 ng/mL
-20%	118
-10%	141
-6%	151
None	176
+6%	196
+10%	212
+20%	273

Changing Models And Language Of Healthcare (1980-2006)

- ❑ Covenential Model
 - Emphasis on professional responsibility
 - Interdependence of professional and patient
- ❑ Quality Agenda
 - Quality management; governance, accreditation
 - Regulation; control; vigilance; enforcement; directives
- ❑ Consumerist Model
 - Health and health services viewed as consumer goods that can be bought and sold



"I'm waiting for your test results."



"I'm waiting for your test results and the lab's EQA report"