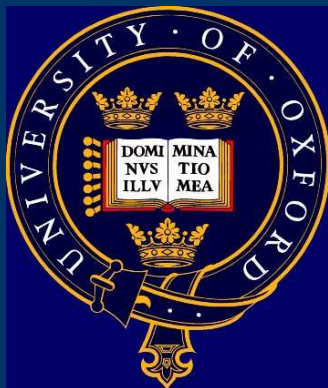


The EXPRESS Study & TIA services in Oxford

Dr Matthew Giles
Biomedical Research Centre,
John Radcliffe Hospital & University of Oxford

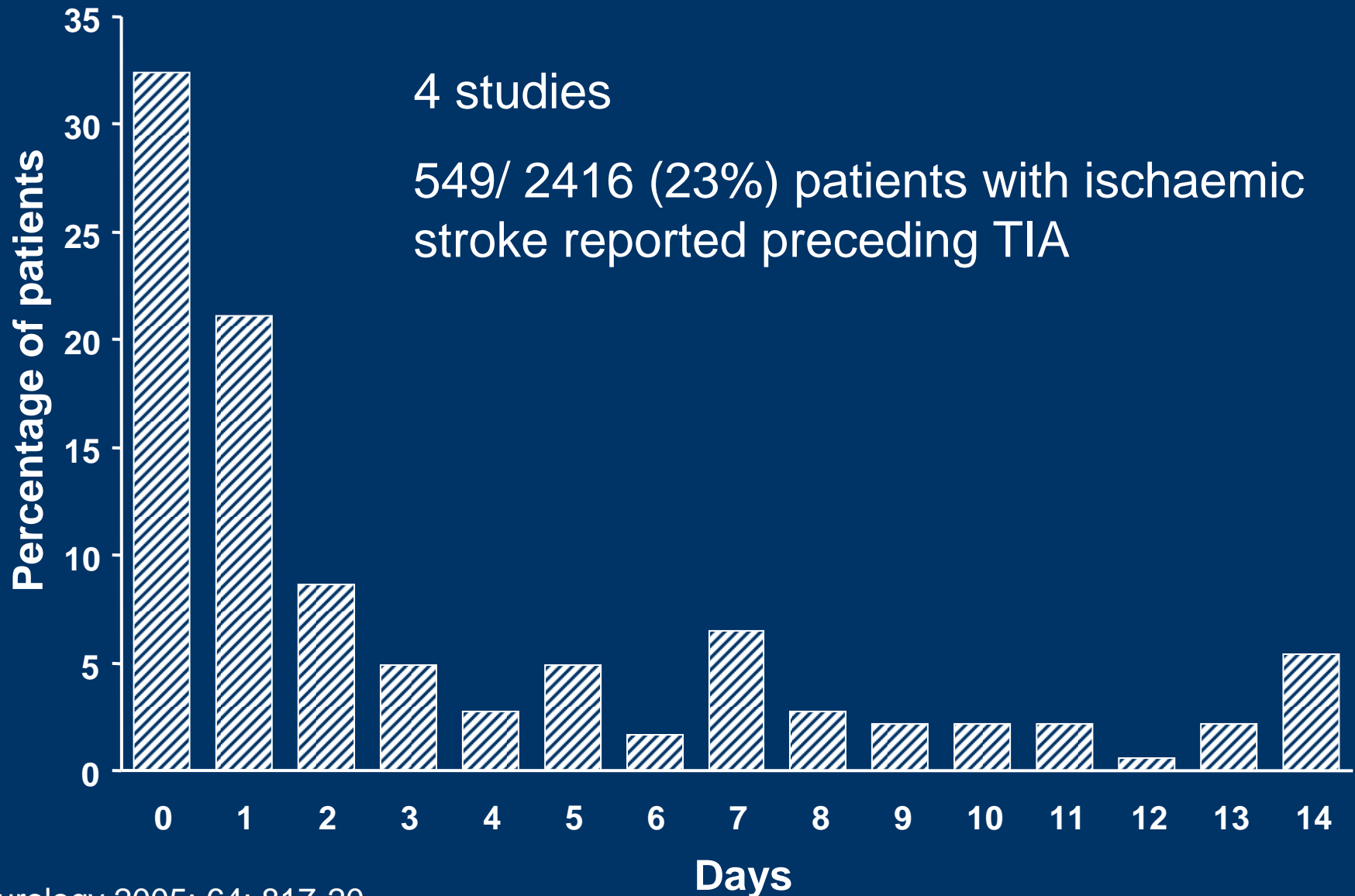
Italian Embassy, London
February 2009



Oxford Radcliffe Hospitals
NHS Trust



Timing of TIA preceding ischaemic stroke

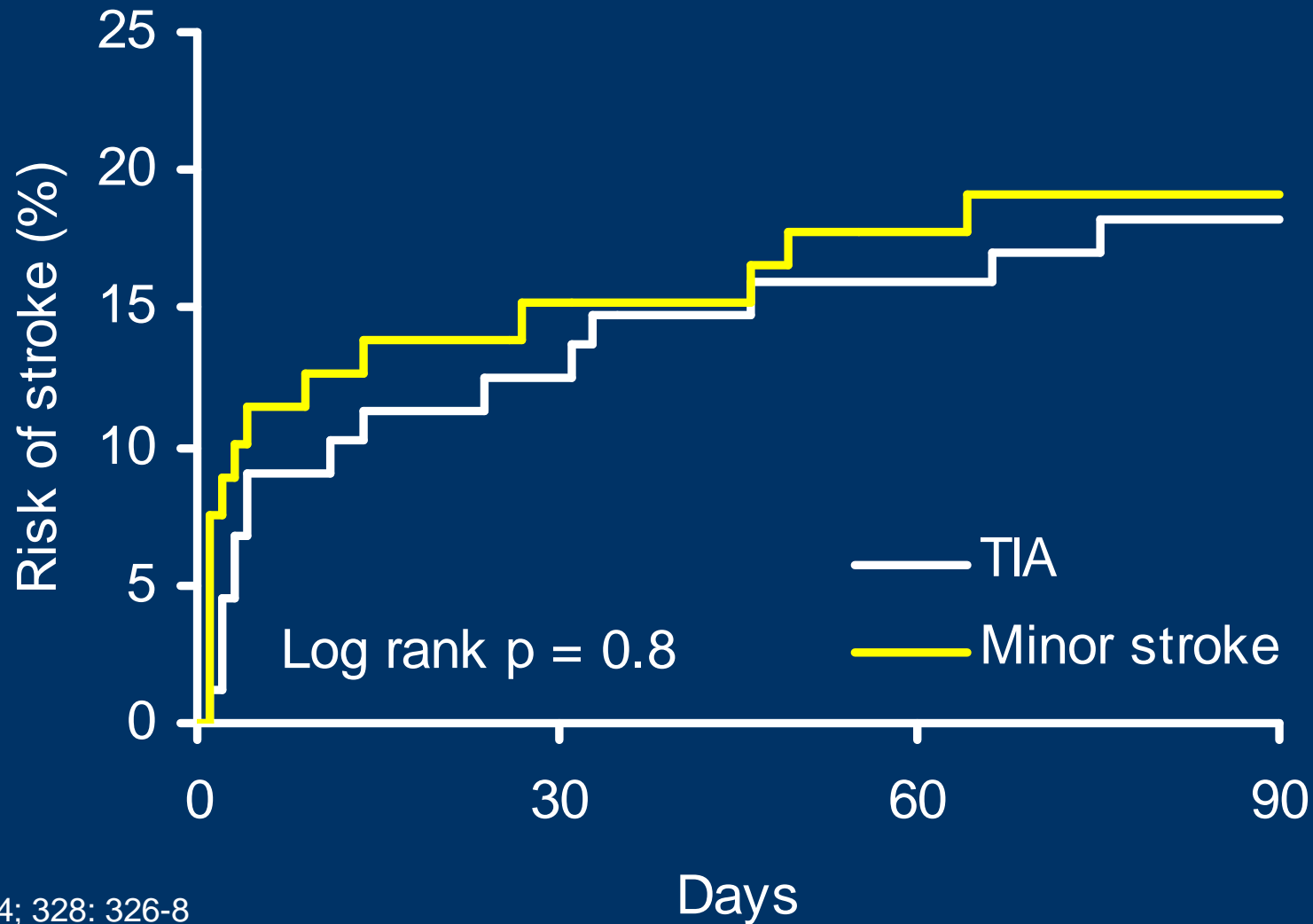


TIA clinics: What happens to DNA's?

Oxford audit data 2002

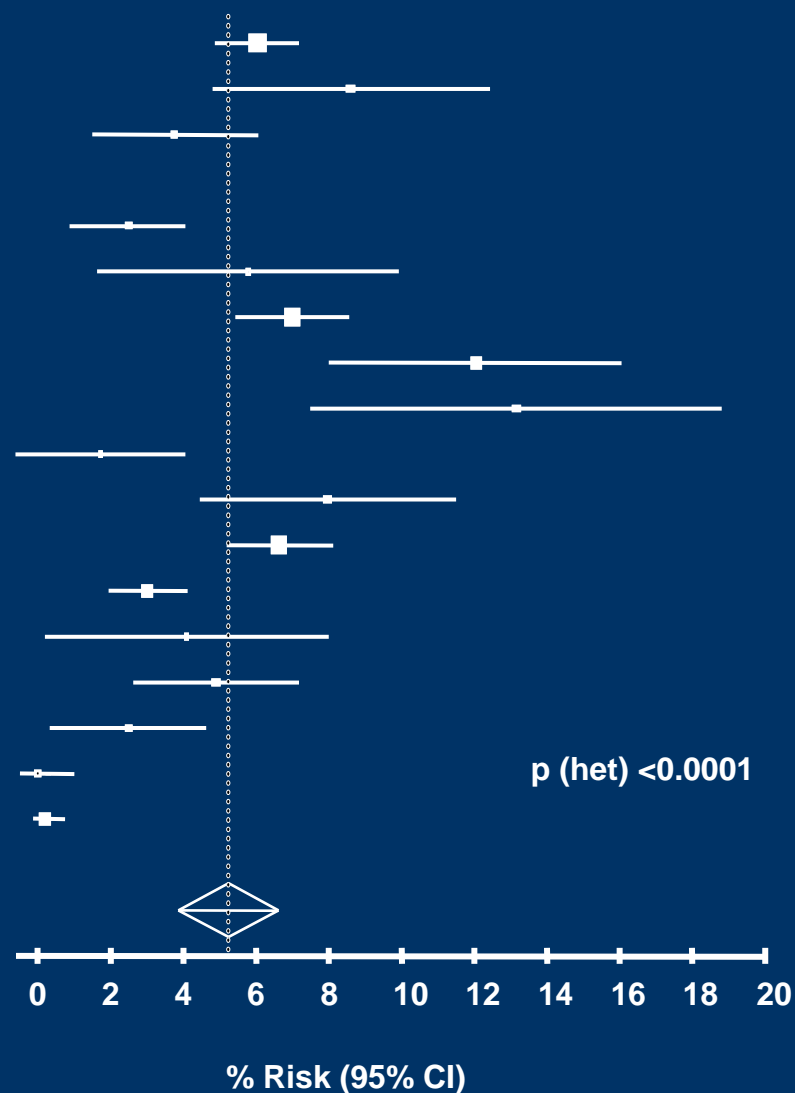
Clinic Frequency	Weekly	Daily
Attendees	134	122
DNA's	19	9
Hospital admission		
Cerebral pathology	5	2
Non-cerebral pathology	3	2
Non-medical reason	11	5
Stroke prior to appointment	10	5

Cumulative risk of stroke following a TIA or minor stroke in OXVASC



Meta analysis of stroke risk at 7 days after TIA

Study	n / N	Risk (%)	95% CI
Johnston 2000	103 / 1707	6.0	4.9-7.2
OCSP	18 / 209	8.6	4.8-12.4
Gladstone et al	10 / 265	3.8	1.5-6.1
Hill et al	Data unavailable		
BASIC	9 / 362	2.5	0.9-4.1
Whitehead et al	7 / 121	5.8	1.6-9.9
Kleindorfer et al	71 / 1017	7.0	5.4-8.5
ABCD	20 / 190	10.5	6.2-14.9
Correia et al	18 / 141	12.8	7.3-18.3
Cucchiara et al	2 / 117	1.7	0.0-4.1
Tsvigoulis et al	18 / 226	8.0	4.4-11.5
Johnston 07 ED	72 / 1084	6.6	5.2-8.1
Johnston 07 clinic	29 / 962	3.0	1.9-4.1
Bray et al	4 / 98	4.1	0.2-8.0
Purroy et al	17 / 345	4.9	2.6-7.2
Calvet et al	5 / 201	2.5	0.3-4.6
EXPRESS study	1 / 160	0.6	0.0-1.8
SOS-TIA	2 / 629	0.3	0.0-0.8
TOTAL	406 / 7830	5.2	3.9- 6.5



Lancet Neurol. 2007;6:1063-72

Projections for average DGH & England (2005)

	<u>DGH</u>	<u>England</u>
Clinic & inpatient events combined:		
Incident definite TIAs	170	26,280
All definite or probable TIAs	360	54,610
All definite or probable strokes	700	107,290
Definite & probable events only:		
Clinic TIA & strokes	610	92,570
Inpatient TIA & strokes	450	69,330
Definite, probable & suspected events combined:		
Clinic activity overall	980	150,440
Inpatient activity overall	620	94,860

Predicted effect of treatment

Based on RCTs of long-term treatment

Most patients

Relative Risk Reduction

Aspirin

20%

Statin

20%

Blood pressure lowering

30%

Some patients

Warfarin

50%

Carotid Endarterectomy

75%

(Aspirin + Clopidogrel

?)

Total

>80%

EXPRESS Study: Design & Intervention

Prospective population-based sequential comparison

Nested in Oxford Vascular Study

Phase 1: 0-30 months

- daily appointment clinic
- Rx advice faxed to GP

Phase 2 : 30-60 months

- emergency access clinic
- treatment started in clinic

- Treatment, assessment, & follow-up similar throughout
- All outcomes independently audited blind to study period

All first events in each phase of EXPRESS

TIA or stroke	Phase 1	Phase 2	Total
Referred to EXPRESS	310	281	591
Referred to other clinics	13	16	29
Referred to A/E or hospital	285	322	607
Cared for by GP only	26	25	51
Whole population	634	644	1278
Non-vascular referrals	339	348	687

Baseline characteristics: EXPRESS Clinic

		Phase 1 (n=310)	Phase 2 (n=281)	P
Age (years)	<80	207 (67%)	189 (67%)	0.93
	≥80	103 (33%)	92 (33%)	
Male sex		141 (45%)	132 (47%)	0.74
TIA		156 (50%)	160 (57%)	0.12
Hypertension		167 (54%)	164 (59%)	0.24
Diabetes		36 (12%)	37 (13%)	0.62
Previous MI		36 (12%)	29 (10%)	0.69
Previous PVD		18 (6%)	20 (7%)	0.51
Prior antiplatelet		139 (45%)	109 (39%)	0.18
Prior statin		63 (20%)	89 (32%)	0.002
Smoking	current	42 (14%)	41 (15%)	0.64
	ex	125 (40%)	120 (43%)	
	never	143 (46%)	118 (42%)	

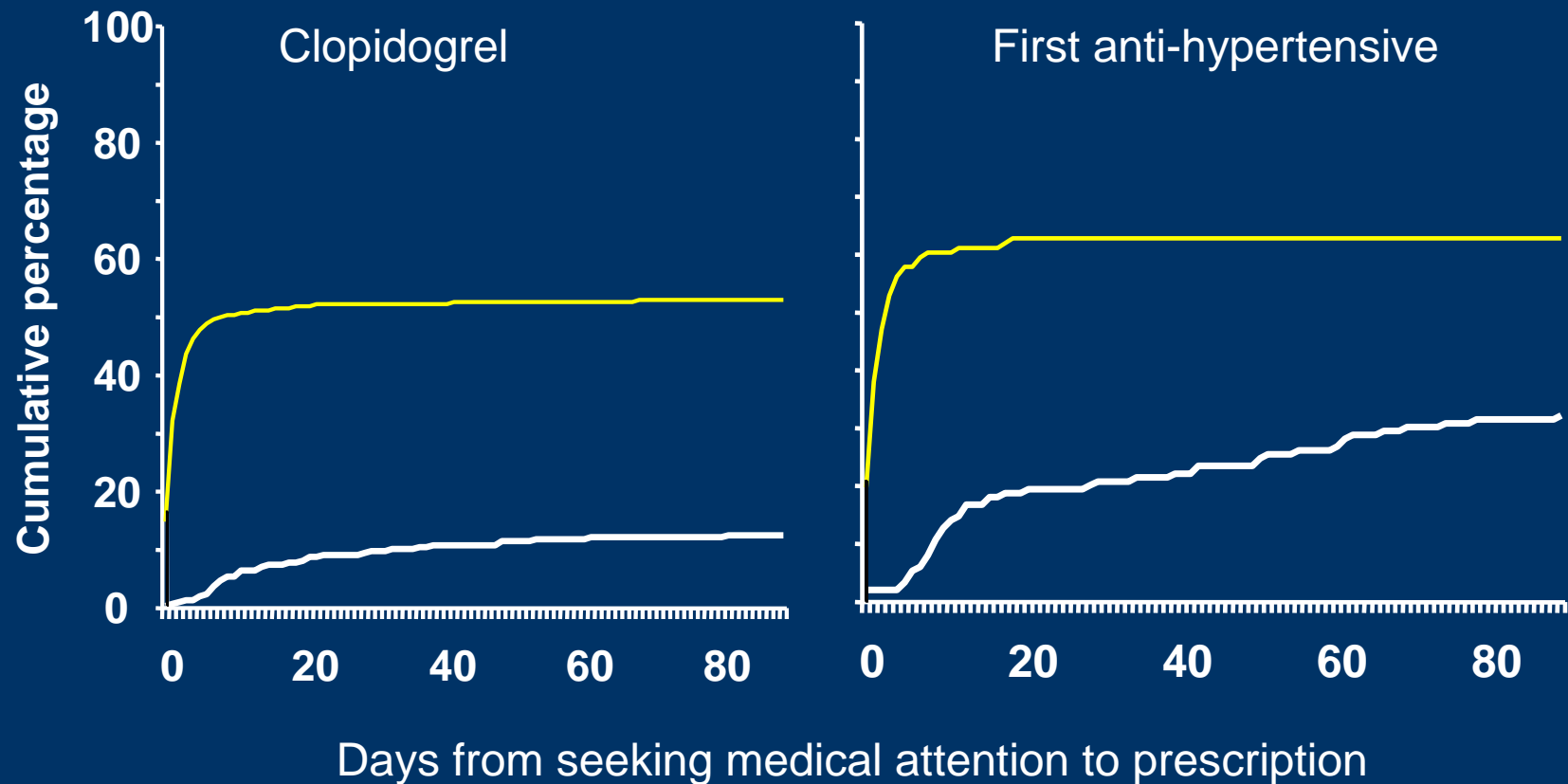
EXPRESS Study: Pre-hospital & hospital delays

Delay	Phase 1 n=310	Phase 2 n=281	P
Pre-hospital: Event to call for medical attention			
≤ 24 hours	184 (60%)	160 (57%)	0.62
Hospital: Call for attention to assessment in study clinic			
≤ 24 hours	70 (23%)	163 (59%)	<0.001

EXPRESS clinic: process of care at 30 days

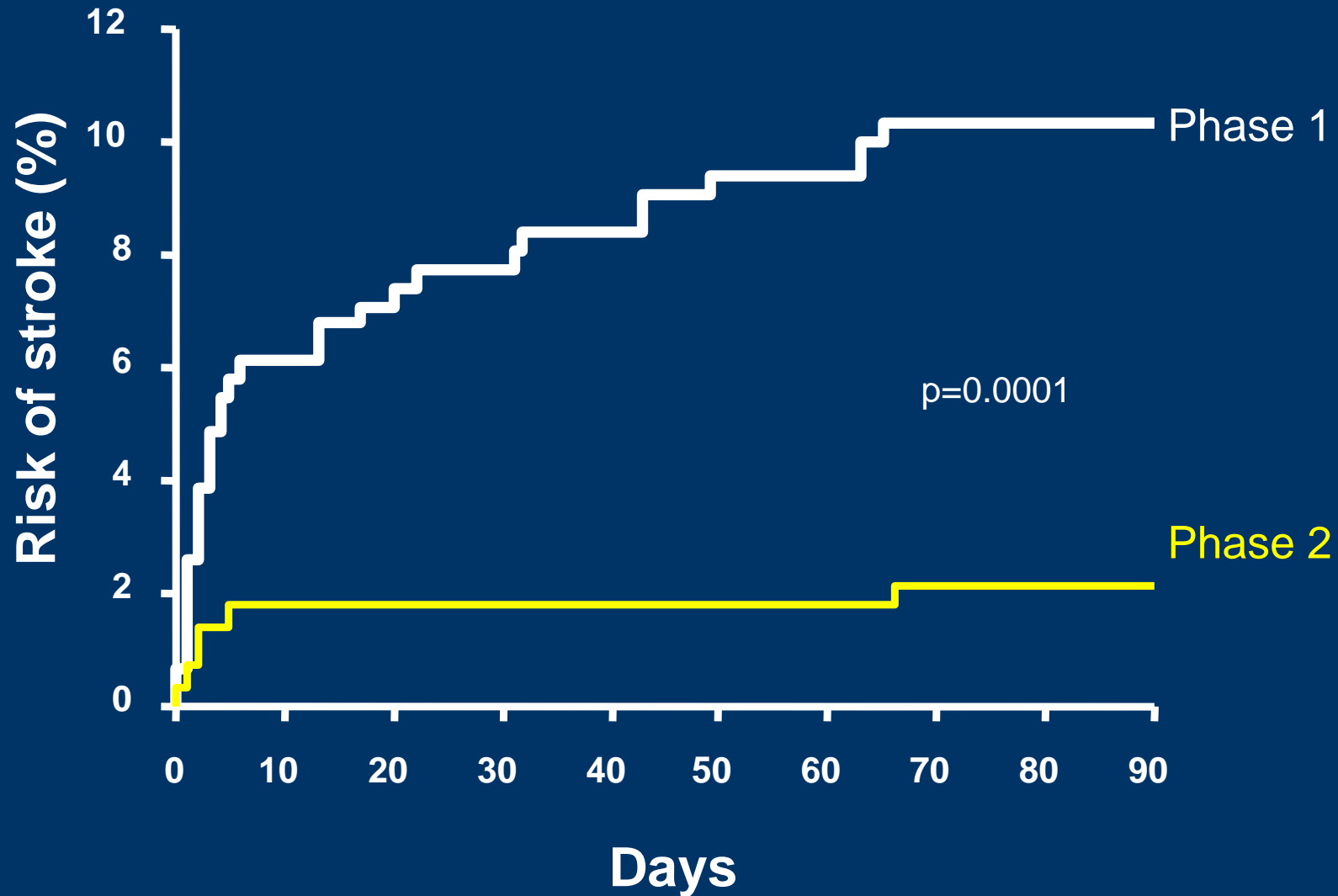
Treatment/ Risk factor	Phase 1	Phase 2	p
Anti-platelets/ warfarin	295 (96.1%)	268 (95.7%)	0.84
Statin	196 (64.9%)	233 (83.8%)	<0.001
BP- lowering drugs			
≥ 1	187 (61.5%)	231 (82.8%)	<0.001
≥ 2	103 (33.9%)	168 (60.2%)	<0.001
Mean (SD) SBP	142 (20)	136 (21)	0.0019
DBP	80 (10)	75 (10)	<0.001
Time to carotid surgery	n=17	n=15	
<7 days	0	6 (40%)	0.006
<30 days	2 (12%)	10 (67%)	0.001

EXPRESS: Delay from presentation to prescription

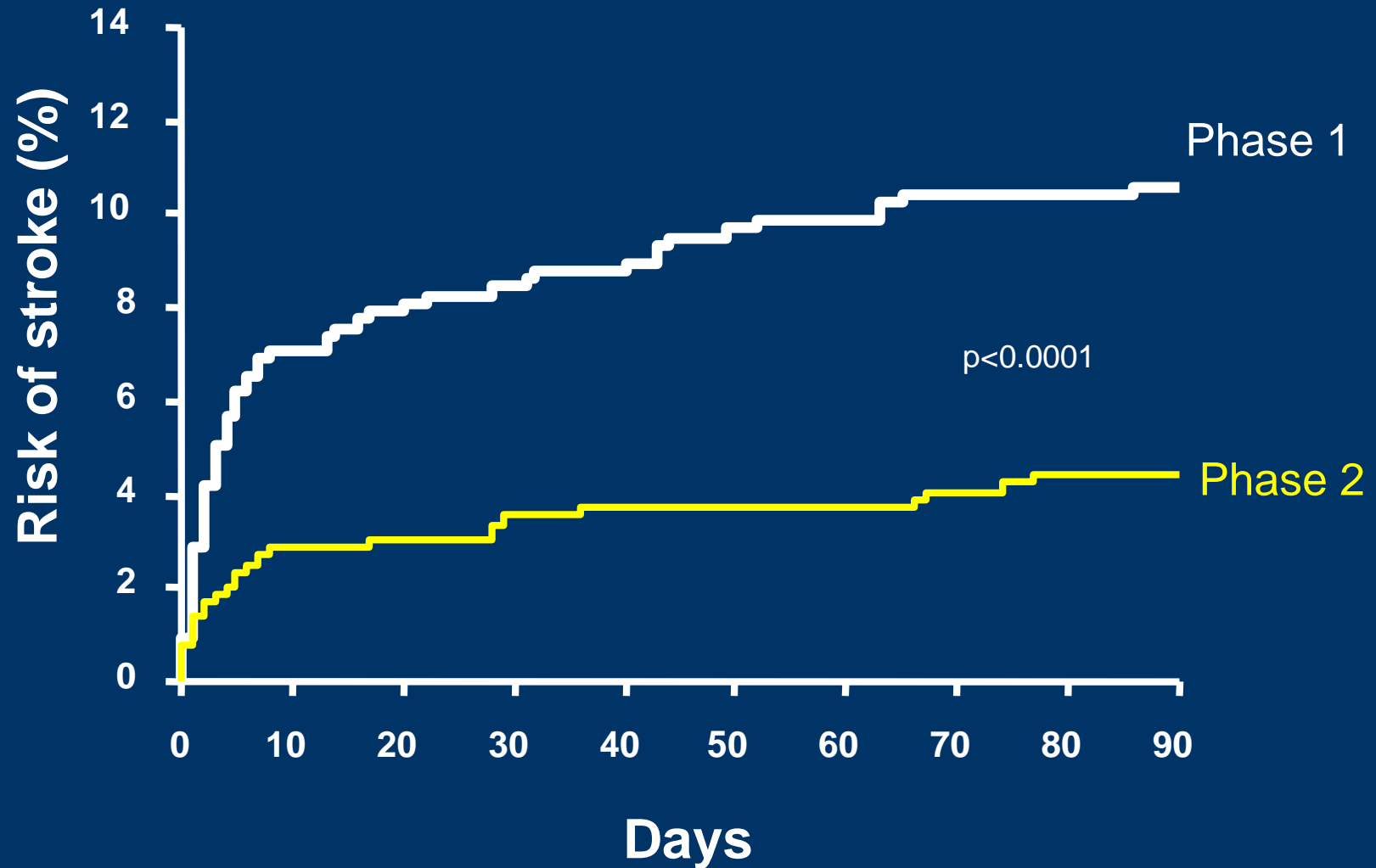


- Phase 1- faxed recommendation
- Phase 2- prescription in clinic

90-day stroke risk after TIA & stroke: EXPRESS clinic referrals



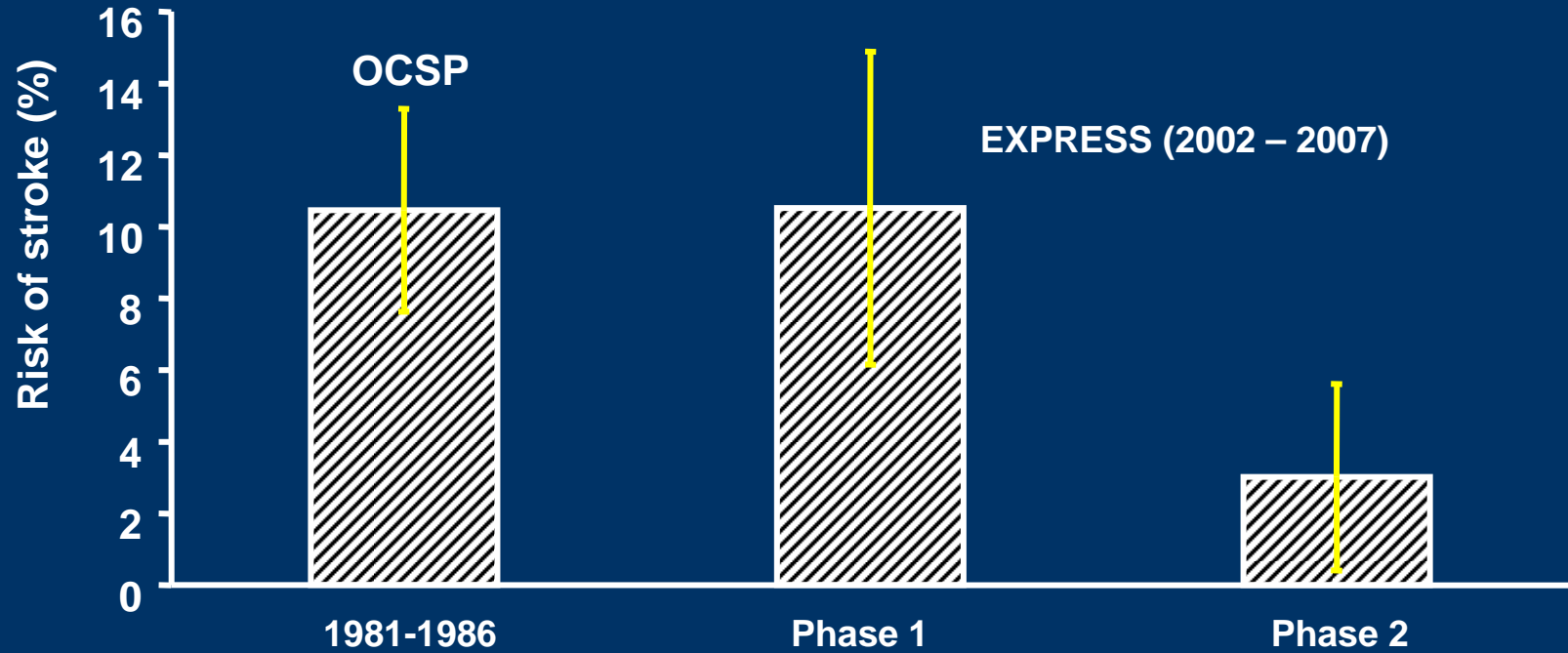
90-day stroke risk after TIA & stroke: OXVASC study population



Disability & costs at 6 months

- Disabling or fatal stroke
 - 16/310 vs 1/281; $p=0.0005$
- Hospital admission for recurrent stroke
 - 25/310 vs 5/281; $p=0.001$
- Hospital bed-days
 - 1957 vs 672; $p=0.017$
- Saving of £624 per patient assessed in phase-2 clinic

The 90-day risk of stroke in clinic-referred incident TIA and minor stroke in the OCSP and the EXPRESS Study



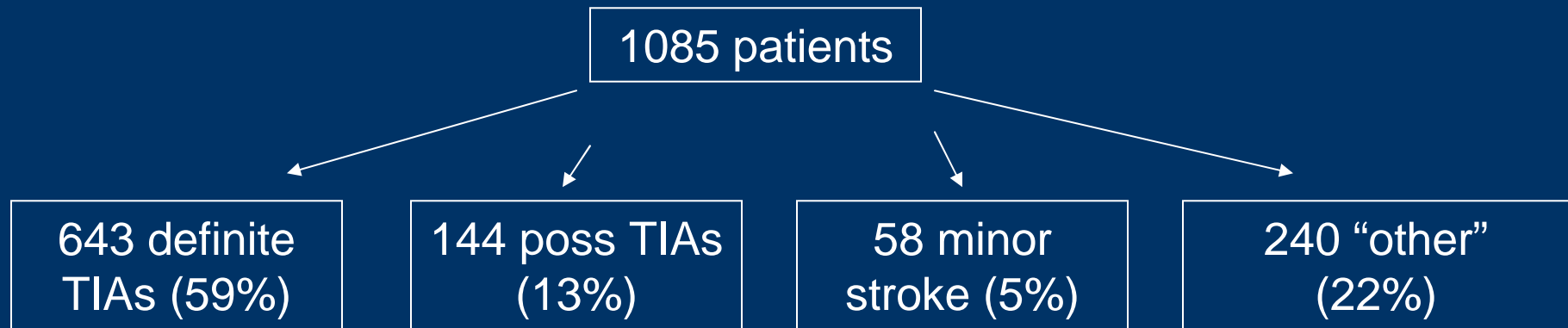
EXPRESS				
Month:	1-15	16-30	31-45	46-60
Risk	9.3% (14/151)	11.3% (18/159)	2.5% (3/121)	1.9% (3/160)

SOS-TIA study

- Observational study
- Impact of rapid access 24 hour “TIA clinic”
- Neurology department, teaching hospital, Paris
- Standardised assessment
- Outcome: stroke at 90 days

Lancet Neurol 2007; 6: 953–60

SOS TIA: results



- Mean age 62 years old, 51% male
- 53% of patients seen on same day as TIA
- 26% admitted
- 13 strokes at 90 days
- The 90-day stroke rate was 1.2% (95% CI 0.7–2.1) vs 6.0% predicted by ABCD² score

“Old” Oxford TIA services

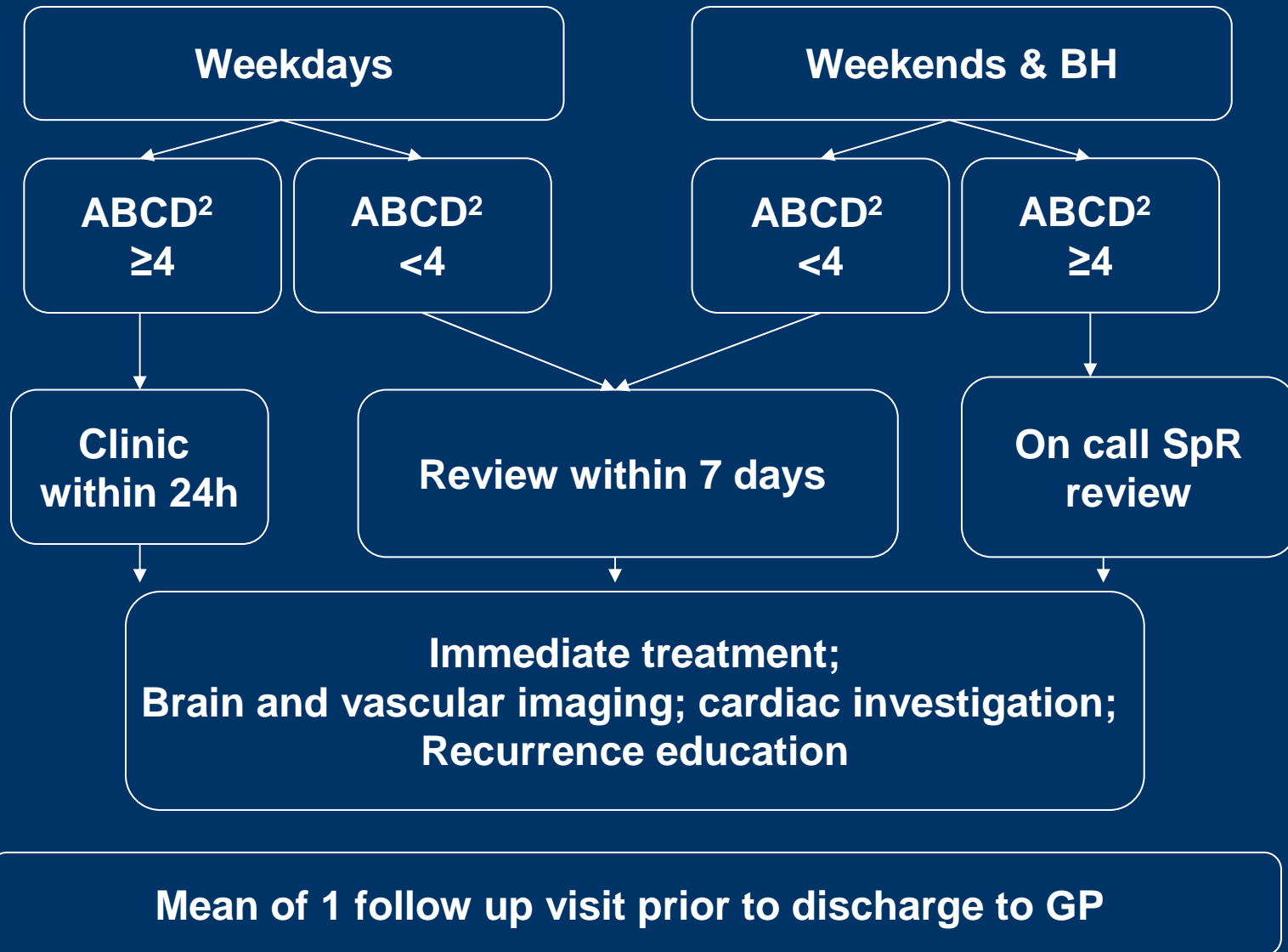
- 600,000 served by Oxford Hospitals
 - predicted 1500 referrals per year
 - 20- 30 per week
- 3 TIA clinics per week
 - capacity 10- 15 new patient slots
- Patients also seen in other clinics and on acute medical takes
- No “specialist” out of hours service

“New” Oxford TIA services

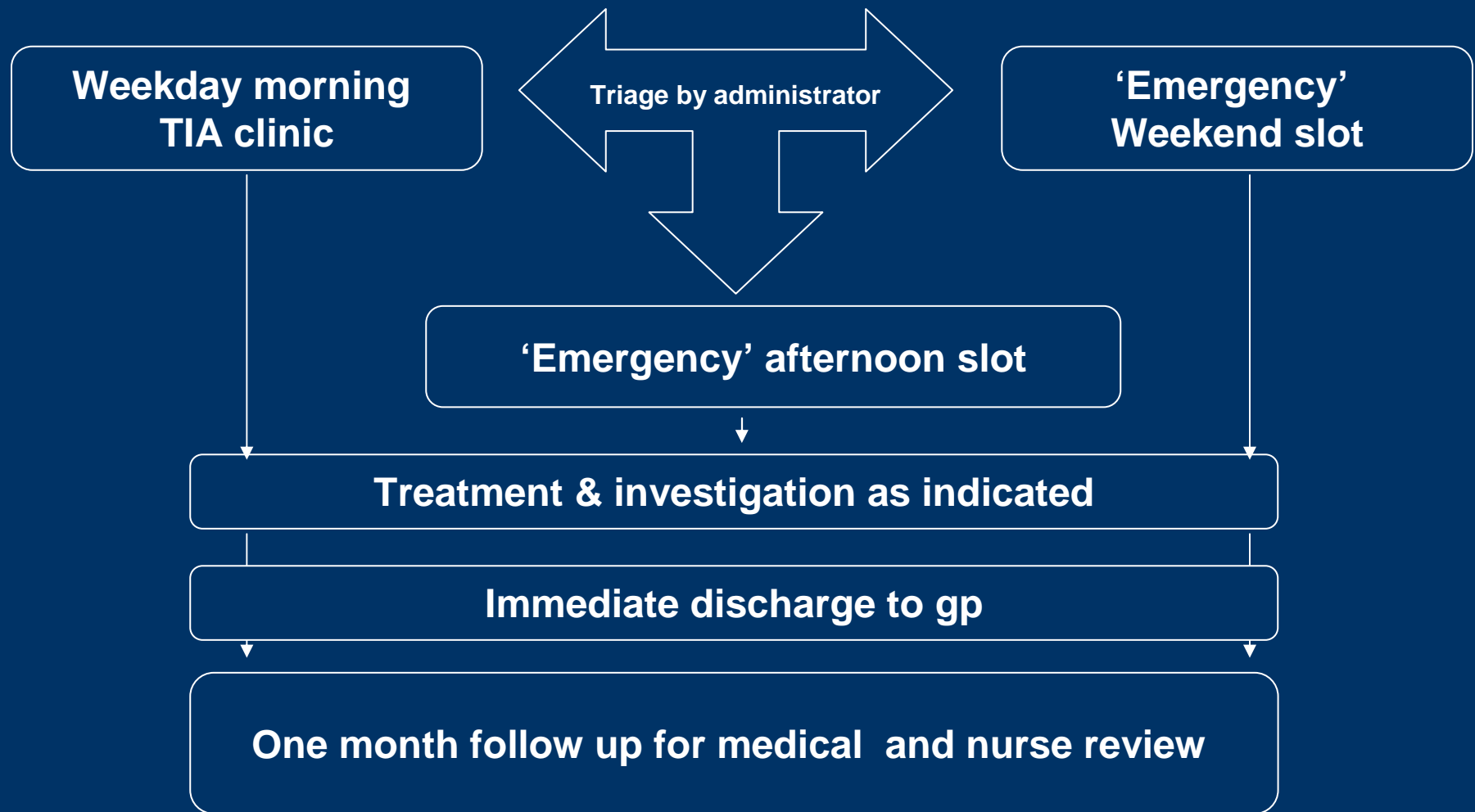
Aim for high risk patients to be assessed within 24hrs & others within 1 week

- Weekday am & pm TIA clinics
- Weekend service for high risk patients
- Centralized referral & triage (ABCD2)
- 1 month f/u by doctor & specialist nurse
- Centralized data collection

Standardised referral from GP/ ED



Patient with suspected TIA from GP/ ED



“New” Oxford TIA services- Challenges

- Coordination between Neurology, Geratology & academic departments
- Optimal method of referral
 - Fax vs phone
 - Doctor vs administrator
- Volume of referrals & availability of service
 - EXPRESS experience
- Clinic space
- Imaging

Conclusion

- TIA is common
- High risk of stroke immediately after TIA
- Risk can be effectively reduced by urgent management
- Logistical problems of providing rapid access services in a large UK teaching hospital