

Early primary-care triage gets the right patients to specialists sooner, cuts unnecessary referrals, and reduces waiting lists

HSD 67

Reshaping Allergy Assessment Pathways In The United Kingdom To Improve Access, Capacity, And Value: A Discrete Event Simulation

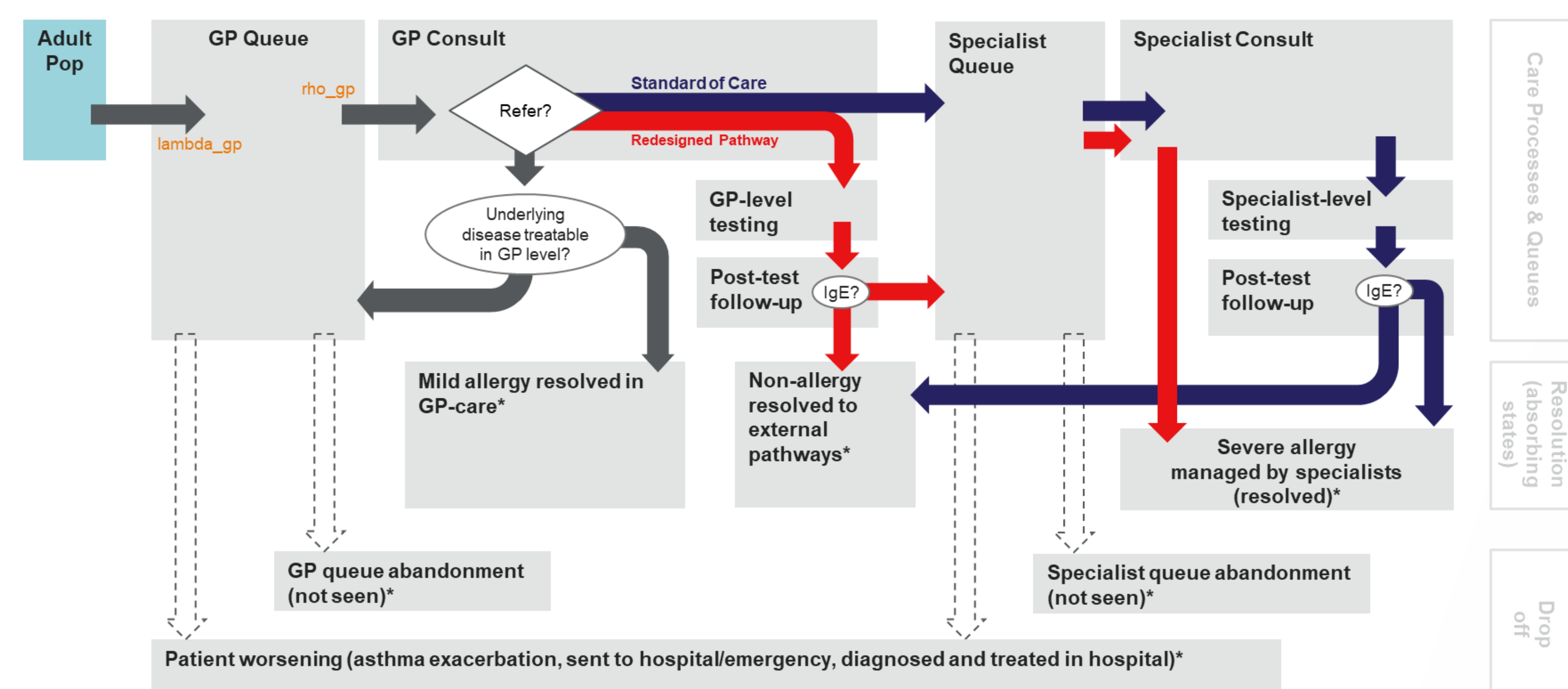
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BACKGROUND: Allergy assessment in the UK remains concentrated in specialist settings despite substantial primary-care burden and long waiting times, limiting timely access to care and inefficiently using specialist capacity. Nine National Health Service (NHS) pilot pathways were introduced as policy-led service redesigns, shifting allergy evaluation earlier in the care pathway through structured symptom assessment and pre-referral serologic specific IgE testing.

OBJECTIVE: This analysis used discrete event simulation (DES) model to evaluate the system-level impact of scaling these pathways to inform commissioning and pathway design decisions

METHODS: We constructed a DES model using real-world epidemiologic and care-pathway parameters from recent Clinical Practice Research Datalink analyses, supplemented by published literature on allergy presentation rates, referral behavior, prescribing patterns, and coincident asthma incidence.

- Usual-care trajectories modeled from presentation to pathway completion.
- Redesigned pathway parameters reflected NHS pilot specifications, including early testing, structured triage, and modified referral rules.
- Outcomes included referral appropriateness, avoidable specialist activity, diagnostic costs, asthma-related events, and system indicators such as waiting-list duration and throughput.
- Scenario analyses varied gatekeeping strength, uptake rates, and key demand parameters.



RESULTS:

System Impact (Pathway Efficiency)

The redesigned pathway improved early differentiation of allergic versus non-allergic disease, and improved system flow

- **Unnecessary specialist referrals reduced by ~25%** (conservative scenario), up to 60% and under stronger gatekeeping and higher retention
- **Specialist waiting lists reduced by ~4 months** (conservative scenario)

Resource Utilization

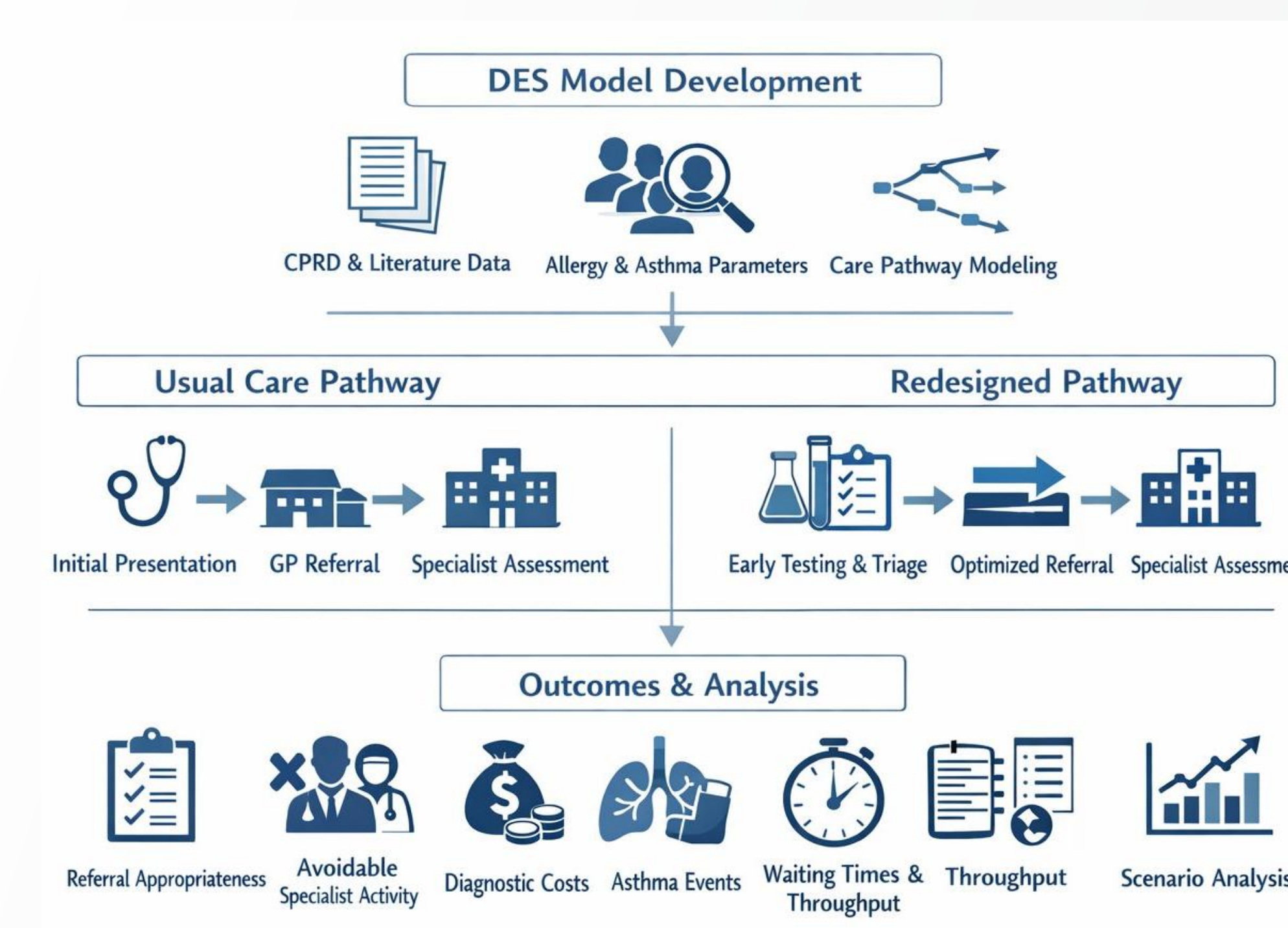
Diagnostic cost per completed referral was **unchanged** overall, reflecting a shift of testing earlier in the pathway rather than an increase in overall testing volume.

Robustness of Findings

Findings were robust to variation in key structural and input parameters and aligned with observed care patterns in UK real-world data

CONCLUSIONS:

- Model results suggest that systematized primary-care allergy assessment can reshape patient flow, reduce pressure on specialist services, and improve pathway throughput, informing commissioning and access-focused service redesign.
- Prospective evaluation will clarify long-term effects, complementing modeled evidence to support decision making.



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