	REGULATION 28 REPORT TO PREVENT FUTURE DEATHS **THIS REPORT IS BEING SENT TO:** **Chief Executive, Medicines and Healthcare products Regulatory Agency**
1	**CORONER** I am Adrian Farrow, Assistant Coroner, for the coroner area of Greater Manchester South
2	**CORONER'S LEGAL POWERS** I make this report under paragraph 7, Schedule 5, of the Coroners and Justice Act 2009 and Regulations 28 and 29 of the Coroners (Investigations) Regulations 2013.
3	**INVESTIGATION and INQUEST** On 27th January 2023, an investigation was commenced into the death of Anita Graves, aged 92 years. The investigation concluded at the end of the inquest on 30th May 2023. The outcome of the inquest was that the medical cause of the death of Mrs Graves was: **1a. Urinary Tract Infection** **1b. E.Coli** **2 Hyperthyroidism** The conclusion was that she **died from E.Coli infection following treatment for hyperthyroidism.**
4	**CIRCUMSTANCES OF THE DEATH** Mrs Graves was diagnosed with hyperthyroidism in 2019. Her condition was monitored by specialists from the Endocrinology Team at the local hospital and regulated by carbimazole and propranolol. The regular dose of carbimazole in particular, was adjusted periodically by Mrs Graves' GP in light of regular reviews of blood test results under the supervision and guidance of the Endocrinology Team. An unusually abnormal blood test result in early December 2022 revealed that Mrs Graves' thyroid had rapidly and unexpected become underactive. The clinical decision was taken to discontinue temporarily the carbimazole and propranolol medication pending analysis of repeat blood tests which were scheduled for early January 2023. By 22nd December 2022, Mrs Graves' thyroid had become overactive again and resulted in an emergency admission to hospital for treatment. Carbimazole and propranolol were re-started and by 30th December 2022, the FT4 had dropped from 116.6 to 64.8, reflecting a significant improvement in thyroid hormones. Mrs Graves remained in hospital, suffering a persistently high heart rate during her admission and developed an E.Coli urinary tract infection, which did not respond to treatment and brought about her death on 4th January 2023. The evidence at the inquest revealed that carbimazole is dispensed in 5mg, 10mg and 20mg tablet forms, which are visually virtually impossible to distinguish from each other. The adjusted doses periodically required different daily combinations of these tablets to achieve the correct prescribed dose. Compounding the potential confusion of differing strengths of tablets was their visual similarity to aspirin, which was also part of Mrs Graves regular prescription and the variety of packaging (unmarked pharmacy boxes and different manufacturer's packaging, for example) in which the carbimazole tablets were dispensed by the community pharmacy. The inquest found that Mrs Graves had inadvertently taken more than the prescribed dose of carbimazole which had caused the sudden underactive thyroid in early December 2022. The ongoing potential confusion of the differing strengths of carbimazole tablets was

	highlighted by both the specialist Endocrinology Team pharmacist and consultant during the evidence notwithstanding that this issue had been recognised and the subject of national guidance historically. Whilst Mrs Graves' hyperthyroidism was not the direct cause of her death, it was a significant contributory condition and the inadvertent increased dose of carbimazole had been the precipitating factor in her hospitalisation and was the background to her inability to fight the infection from which she died.
5	**CORONER'S CONCERNS** During the course of the inquest the evidence revealed matters giving rise to concern. In my opinion there is a risk that future deaths could occur unless action is taken. In the circumstances it is my statutory duty to report to you. The **MATTERS OF CONCERN** are as follows. – (1) That the visual similarity of tablets of differing strengths of carbimazole to each other and to aspirin presents a risk of inadvertent overdose; and (2) That the dispensing process in the community for carbimazole appears to contribute to rather than mitigating the risk
6	**ACTION SHOULD BE TAKEN** In my opinion action should be taken to prevent future deaths and I believe your organisation has the power to take such action.
7	**YOUR RESPONSE** You are under a duty to respond to this report within 56 days of the date of this report, namely by 15th August 2023. I, the coroner, may extend the period. Your response must contain details of action taken or proposed to be taken, setting out the timetable for action. Otherwise you must explain why no action is proposed.
8	**COPIES and PUBLICATION** I have sent a copy of my report to the Chief Coroner and to the following Interested Persons: 1) [redacted] (next of kin to Mrs Graves); 2) Marple Medical Practice; and 3) Endocrinology and Pharmacy Department of Stepping Hill Hospital. I am also under a duty to send the Chief Coroner a copy of your response. The Chief Coroner may publish either or both in a complete or redacted or summary form. He may send a copy of this report to any person who he believes may find it useful or of interest. You may make representations to me, the coroner, at the time of your response, about the release or the publication of your response by the Chief Coroner.
9	**Adrian Farrow** **HM Assistant Coroner** **20.06.2023**