TABLE OF CONTENTS

| ETHICS COMMITTEE APPROVAL DECLARATION DEDICATION ABSTRACT ACKNOWLEDGEMENTS TABLE OF CONTENTS | | PAGE ii iii | | | |
|----------------------------------------------------------------------------------------------|------------------------------------------------------|------------------------|------|------------|---|
| | | iv v vii viii | | | |
| | | | LIST | OF FIGURES | X |
| | | | LIST | xi | |
| | | | СНА | PTER 1 | |
| 1.1 | Introduction | 1 | | | |
| 1.2 | Thyroid Physiology | 2 | | | |
| 1.3 | Hyperthyroidism | 3 | | | |
| 1.4 | Primary Hypothyroidism | 4 | | | |
| 1.5 | Secondary Hypothyroidism | 5 | | | |
| 1.6 | Tertiary Hypothyroidism | 6 | | | |
| 1.7 | Autoimmune Disease | 6 | | | |
| 1.8 | Graves Disease | 6 | | | |
| 1.9 | Thyroiditis | 6 | | | |
| 1.10 | Diagnostic Modalities in Thyroid Disease | 7 | | | |
| 1.11 | Diagnostic Testing | 7 | | | |
| 1.12 | Tests of Thyroid Function | 8 | | | |
| 1.13 | Total Thyroxine (tt4) and Triiodothyronine (tt3) | 8 | | | |
| 1.14 | Free Thyroxine (FT4) and Free Triiodothyronine (FT3) | 8 | | | |
| 1.15 | Thyroid Stimulating Hormone (TSH) | 9 | | | |
| 1.16 | Thyroglobulin | 10 | | | |
| 1.17 | Clinical Practice Guidelines | 10 | | | |
| 1.18 | Implementing Clinical Practice Guidelines | 11 | | | |
| 1.19 | Computers for Guideline Implementation | 12 | | | |
| 1.20 | Limitations of Clinical Practice Guidelines | 13 | | | |
| 1.21 | Poorly Crafted Guidelines | 13 | | | |

| 1.22 | Guideline Maintenance | 14 |
|------------|----------------------------------------------------|-----|
| 1.23 | Stifled Flexibility and Innovation | 14 |
| 1.24 | Potential for Increased Resource Utilization | 14 |
| | | |
| СНАІ | PTER 2 | |
| 2.1 | Aim | 16 |
| 2.2 | Methodology | 16 |
| 2.2.1 | Inclusion Criteria | 16 |
| | Exclusion Criteria | 16 |
| _,_, | Enteralism enterm | 10 |
| CHAI | PTER 3 | |
| 3.1 | Results | 18 |
| 3.2 | Requested Frequency of Tests | 18 |
| 3.3 | Statistical Representation of Results | 20 |
| 3.4 | Summary of Statistical Analysis for Specific Tests | 22 |
| 3.5 | Fisher Exact Test | 22 |
| 3.6 | Cost Comparison | 22 |
| CHAI | PTER 4 | |
| 4.1 | Data Analysis and Discussion | 25 |
| 4.2 | Requested Frequency of Tests | 25 |
| 4.3 | Fisher Exact Test | 27 |
| 4.4 | Results of Cost Comparison | 27 |
| CHAI | PTER 5 | |
| 5.1 | Conclusion | 29 |
| 5.2 | Limitations of the Study | 30 |
| 5.3 | Recommendations | 30 |
| 5.4 | Recommendations for further research | 30 |
| Dbb | DENCES | 42 |
| REFERENCES | | 42 |
| APPE | NDICES | xii |

LIST OF FIGURES

| Figure | | Page |
|--------|-----------------------------------|------|
| 1 | Hypothalamic-Pituitary-Axis | 3 |
| 2 | Components of Physician Adherence | 12 |
| | to Guidelines | |

LIST OF TABLES

| Table | | Page |
|-------|-----------------------------------------------------|------|
| 1 | Results of Pilot Study | X |
| 1.1 | Thyroid Function Tests | 2 |
| 1.2 | Aetiology of Primary Hypothyroidism | 5 |
| 1.3 | Impact of Clinical Practice Guidelines | 13 |
| 3.2.1 | Requested Frequency Before March 2003 | 18 |
| 3.2.2 | Requested Frequency After March 2003 | 19 |
| 3.3.1 | TSH | 20 |
| 3.3.2 | FT3 | 20 |
| 3.3.3 | FT4 | 20 |
| 3.3.4 | FT4 and FT3 | 20 |
| 3.3.5 | TSH and FT3 | 20 |
| 3.3.6 | FT4 and TSH | 21 |
| 3.3.7 | FT4 and TSH and FT3 | 21 |
| 3.4 | Summary of Statistical Analysis | 22 |
| 3.6.1 | Change in Membership – Discovery Health (2002-2004) | 23 |
| 3.6.2 | Normalised Cost Comparison For TSH | 23 |
| 3.6.3 | Normalised Cost Comparison For Free T4 | 23 |
| 3.6.4 | Normalised Cost Comparison For Free T3 | 24 |
| 3.6.5 | Normalised Cost Comparison For the Combination | 24 |
| | Of Free T4 and TSH | |
| 3.6.6 | Normalised Cost Comparison For the Combination | 24 |
| | Of Free T4 and Free T3 | |

APPENDICES

| Appendix | | Page |
|----------|---------------------------------|------|
| A | Evidence-Based Benefits Thyroid | 34 |
| | Function Testing | |
| В | Data Reporting Form | 36 |